



First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

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## Flight

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### DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

Aug. 27 ....	Entries Close for Coupe Deutsch
Sept. 3-4 ..	Belgian Competitions (Brussels)
Sept. 4-11 ..	Brescia Races
Sept. 10 ....	Pulitzer Trophy, Detroit, U.S.A.
Sept. 18 ....	Gordon Bennett Balloon Race, Brussels
Oct. 1 ....	Coupe Deutsch de la Meurthe
Oct. 22-30 ..	Aero Exhibition, Prague
Nov. 3 ....	Lecture, "Manœuvres of Getting Off and Landing," by Sq. Ldr. R. M. Hill, before R.Ae.S.
Nov. 12-27 ..	Paris Aero Salon
Nov. 15-26 ..	International Air Navigation Congress (Paris)
Nov. 17 ....	Lecture, "Requirements and Difficulties of Air Transport," by Col. F. Searle, before R.Ae.S.
Dec. 1 ....	Lecture, "Design of a Commercial Aeroplane," by Capt. G. de Havilland, before R.Ae.S.
Dec. 15 ....	Lecture, "Development of the Fighting Aeroplane," by Capt. F. M. Green, before R.Ae.S.

## EDITORIAL COMMENT



THE Air Ministry has issued an official *communiqué* on the subject of the Cairo-Baghdad air route, which we referred to in our comments two or three weeks ago. By this communication it is conveyed that the route to be traversed is somewhat shorter than that originally stated.

The opening up of a service between Egypt and Mesopotamia is of far more importance than would appear at first sight. What it really does is to establish a link, hitherto missing, in the chain of air communications between Britain and India and the Far East. It may be within the recollection of our readers that a competition flight from this country to India, the machines to carry a commercial load, had to be definitely postponed because of the unsettled conditions obtaining among the tribes of nomadic Arabs frequenting the northern edge of the Syrian desert, and who are no longer under the political control of this country. The necessity for establishing at the earliest possible moment an independent route, free from the interference of these tribesmen, caused the Air Ministry to enter upon the investigation of an alternative route to that hitherto employed by the R.A.F. in the War, and since the Armistice. The result has been the discovery of a practicable route, enabling aircraft to proceed from Ramleh, in Palestine, to Amman, on the Hedjaz railway, an extension of the existing Cairo-Ramleh route. From Ramleh and Amman, the route proceeds, by way of the oasis of Kasr-Azrak, to Ramadie on the Euphrates, and thence to Baghdad and farther east.

The opening up of this route will secure the continuity of our aerial communications with India, the Far East and Australia, and it thus marks the completion of one of the most important of the world's air routes.

Outgoing mails are to be collected at London and Cairo. Those from London will be forwarded by ordinary transport to Egypt, the bags being handed over at Port Said by the captain of the steamer to a representative of the Royal Air Force. These,

together with the mails from Cairo, will be forwarded by air from the aerodrome at Heliopolis. This service was to have begun on the 1st inst., but the Post Office has not, so far as we are aware, made any public information on the subject. We are much more than pleased at the opening up of this service, which is one of the first links in the chain of Empire air communications which we hope to see established in the very near future. It is not very much, perhaps, but it is an index of the times, and is consequently much more valuable as such than as an actual adjunct to our far-flung scheme of inter-communication between the various parts of the Empire.

**Empire Air Communications.** In his reply sent to the Dominion Prime Ministers and other Empire representatives who have recently been in conference in London, His Majesty the King says: "These meetings, and the exchange of views between the Ministers of the great communities which they represent, upon the many problems affecting the common interest of the British peoples, are essential to the unity and well-being of the Empire, and to the general peace of the world. Every facility must be given for such periodical meetings, and to ensure this we look confidently to the men of science and research to discover improved means of inter-communication between all parts of the British Commonwealth."

With all submission, we would urge the point that it is not in reality to the men of "science and research" we have to look to provide those means of improved communications. These latter have already been brought to a point at which they are all ready and waiting to be brought into practical use, and it needs only an enterprising policy on the part of His Majesty's Government and the Governments of the Dominions to make them effective. Science and research have carried us very far along the road, and, while much still remains to be done, they have together solved the problem of rapid communications by giving us the aeroplane and the airship. These have brought India within the week's journey from England, and have reduced the time-distance to Australia to ten days—if we care to take proper hold of the new transport and organise it to give these results. But that is exactly what His Majesty's Government will not do. Instead of striving by all means possible to speed-up communications, and thus to bring the outlying communities of the Empire into closer touch and accord, they patently ignore what is close to their hands, and seem determined that develop-

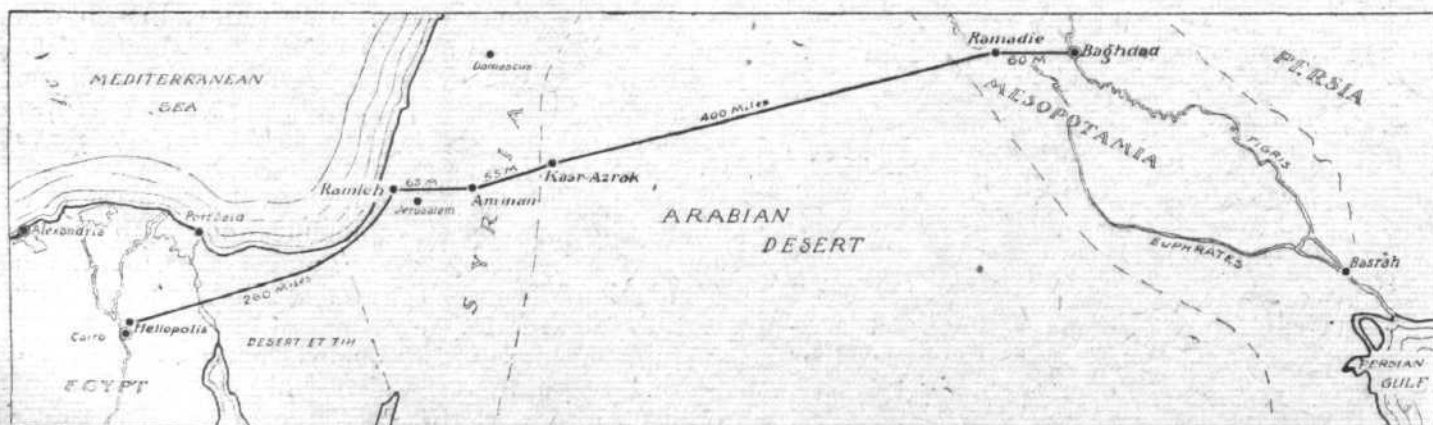
ment shall remain in the hands of other nations, the while we continue to recede into a more hopeless position among the nations of the air.

**Mr. Holt Thomas on the Situation**

In last Sunday's *Observer* Mr. Holt Thomas, in the course of an interview, summed up the situation quite exhaustively. Against thousands of miles of foreign air routes, this country is still represented by the miserable seventy miles which lie between Croydon and mid-Channel. Three foreign lines come to London; one British returns! We have definite data as to its costs, yet after two years of the London - Paris air service, with its clockwork regularity and its known costs—a service which for the first time in the world's history has brought Paris within two hours of London—commercial aviation with all its great possibilities within the Empire is represented by about one or two machines a day crossing to Paris!

Mr. Holt Thomas points out that one of the principal matters to be considered by the Dominion Premiers was the question of rapid communications within the Empire. There is nobody who has said to them: "Now, gentlemen, for two years we have had an aeroplane running with 94 per cent. efficiency, day after day, notwithstanding the climatic conditions, at 100 miles an hour, between London and Paris. If under these very difficult climatic and cross-Channel conditions it is possible to fly these 250 miles, why cannot we fly at the same speed from London to Australia, in similar stages, in 100 hours, or slightly over four days? Is it possible, and, if it is possible, what is the cost?"

The Australian route has already been flown by aeroplane. Cape Town has been reached by air. The Atlantic has been crossed. All by British pilots on British machines. All without organised assistance. "I know," says Mr. Holt Thomas, "what the aeroplane can do with organisation, and from the evidence of first-class pilots who have flown in various parts of the Empire in tropical climates, I can say that the flying part is perfectly possible. There is not the slightest reason why the 250 miles stage between London and Paris should not be multiplied. Multiply it by forty and we have covered the 10,000 miles between London and Australia." He then goes into figures in relation to the cost of Empire air services, pointing out that the running costs of a modern machine, which is being reduced daily by British design, is roughly 3s. per ton mile flown. This means a cost for 10,000 miles of £1,500, which



Sketch Map of the New Cairo-Baghdad Airway



for the carriage of one ton works out at 16s. per lb. or 1s. per ounce. Looking at the figures in another light, the running costs of a service to Australia, one machine each way weekly, would be £150,000 per annum—£50,000 less, he says, than the far too large sum of £200,000 already sanctioned by the Treasury for the cross-Channel service.

Coming to the question of aerodromes, he assumes the cost of each at £5,000, suggesting they would be required every 250 miles, and says that the total cost is nothing to appal, when taking account of the enormous possibilities of linking up the Empire at 100 miles an hour. £5,000 multiplied by forty is £200,000. "Is there," he asks very pertinently, "anything in these figures—always bearing in mind that Cairo becomes two days from London, Calcutta three days, and Australia five days—to prevent the scheme being carried out?" He takes the cost of £150,000 per annum for a weekly service to Australia, and points out that this cost takes no account at all of receipts though it is known that these would be large. The scheme, he says, is practical and capable of being carried out. He then asks:

Is there £150,000, or say £250,000 to avoid all errors, forthcoming from the British Empire for a period of years as a guarantee for this service? If there is, I can safely say that the capital required is forthcoming. From the figures I have given above, say, for equipment and aerodromes, it is possible to see that even by doubling these figures for safety, or even trebling them, that the capital for this vast Imperial scheme is not large. Double the equipment and, say, £800,000 instead of £400,000! Treble the £200,000 for aerodromes and say £600,000, and we only have one million and a half capital required for these two important items. If the guarantee of the Home Government and the various overseas Dominions, for £250,000 per annum for a limited period, were forthcoming, a capital of two and a half millions or more would be ready at twenty-four hours' notice. How is it that I can make this statement? Simply because in twenty-four hours, for a *national* ideal I had one million offered me for the cross-Channel services, conditional on a Government guarantee of a much lesser sum. Will these same patriotic British financiers and bankers come forward as willingly with a larger sum for an *Imperial* idea, such as this? Certainly they will; and my statement is perfectly safe."

Mr. Holt Thomas' figures must stand until they are proved fallacious, if that is possible. Assuming that they were not available, it is not a little unfortunate that all these facts and figures were not placed before the Imperial Conference when it was sitting in London.

#### What Others Are Doing

It is always a thankless task to criticise one's own country and its methods, the one saving grace of such necessity being that it is only by criticism that anything can be got to move. We have had to criticise the policy of our own Government in its attitude towards aviation in season and out of season. On this occasion we do not intend to utter a word of such criticism. It will, we think, be enough for the purpose we have in mind to touch briefly upon what our rivals in the race for air supremacy are actually doing in comparison with ourselves.

We have before us an extract from a French newspaper, which is headed: "Our Advance is Great." This paragraph sets forth that during June the French air lines carried 1,533 passengers over the lines between Paris-London, Paris-Amsterdam, Paris-Warsaw, Toulouse-Casablanca, Boulogne-Montpelier, and Bayonne-Santander. During the same month, Belgian services, carried 102 passengers

on the London-Brussels-Amsterdam route, Dutch lines conveyed 106 between Amsterdam and London, while British air lines on the cross-Channel routes carried 384 passengers. That is to say, the French lines enumerated carried four times the number of passengers carried by British aircraft. We have said that the moral is so self-evident that it needs no criticism of Government policy to point it. Surely, these figures alone are enough to justify our standpoint. But when we come to consider the case of poor suppressed and down-trodden Germany the state of civil aviation in this country takes on a distinctly depressing aspect. Germany has actually in operation at least nine important air routes, and her commercial machines fly some six thousand miles daily. And, this, it must be borne in mind, is under the handicap imposed by the Peace Treaty, which forbids Germany to run air services outside her own borders, and which has completely prevented the construction of new machines for the purpose. She is carrying on these services with about 100 old military machines acquired by the civil aviation companies from the Allies after their surrender by Germany to the Inter-Allied Aeronautical Commission Control. That is to say, Germany is handicapped in every conceivable way in the present development of civil aviation, yet she is doing exceedingly well, as the figures show. We, with every initial advantage, are doing practically nothing. The patent reason is that, in the words of our own Secretary of State for Air, the German Government are unquestionably fostering civil aviation. Our own is—well, not exactly "fostering" the movement. We will allow the facts to convey their own lesson.

#### An Australian Air Navy

It was both an interesting and a significant function which took place on the Hamble river last week when "A.N.A.1," the first of six seaplanes for work with the Australian Navy, was launched by Mrs. Hughes, wife of the Prime Minister of the Commonwealth. It was interesting for the reason that this was the first naval aircraft to be completed in peace time as a part of the material of a Dominion Navy. From this point of view it seems to emphasise the fact that aircraft are now as much a part of naval armament, be the navy concerned large or small, as surface ships and guns. It has long been accepted that aircraft are absolutely inseparable from the naval operations of the future, but it is only when we see concrete expression given to the proposition that it leaves the realm of the academic for the practical.

Its significance, to our way of thinking, lies mainly in the fact to which it gave expression that our Overseas Dominions are standing solidly with the Mother Country in all matters connected with Imperial defence. In order that they may perform their fair share of the task which is the common lot of the Empire they must be prepared down to the last detail for anything that may eventuate. No defence scheme, local or Imperial, can be even approximately complete unless on the material side it provides for an adequate number of aircraft of suitable types. Hence the naval and military advisers of the Commonwealth have insisted upon Australia maintaining her proper quota of such aircraft, and that is why we were privileged to witness what we regard as the birth of the Australian Air Navy. It is to be hoped other Dominions will note and follow the lead set.

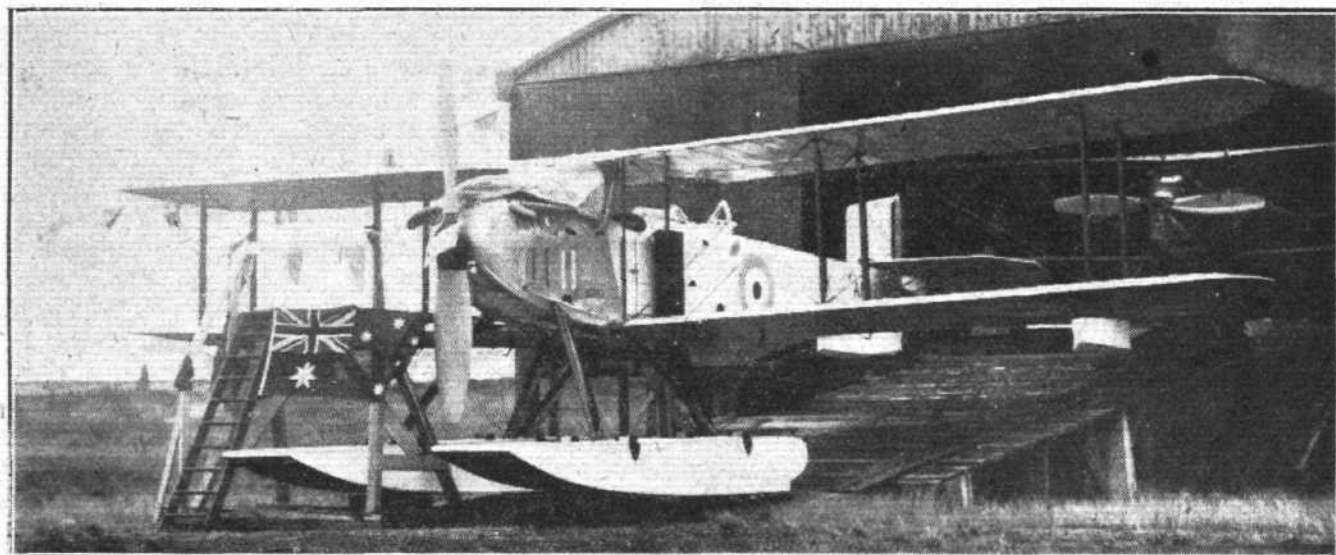
# THE FAIREY TYPE IIID SEAPLANE

360 H.P. Rolls-Royce "Eagle" Engine

It is a curious fact that in the development of aircraft one comes across, now and then, a type which has survived through a much greater number of years than the vast majority of its contemporaries. This applies, for instance, to such machines as the Avro 504, which, originally designed in 1913, has undergone various slight modifications, but is still very popular in a form not greatly different from that of the 1913 machine. Another instance is the Bristol Fighter,

carriage, and was used as a ship 'plane and for general purposes. She was, also, we believe, fitted with air bags and hydrovanes and used for experimental purposes for alighting on the sea.

Later on the wing area was increased, the same fuselage being used, and floats were again fitted, and the machine, still with the 260 h.p. Sunbeam engine, was used as a sea bomber. Finally, came the type IIIC which had a 375 h.p. Rolls-Royce "Eagle" engine, smaller wings and, conse-

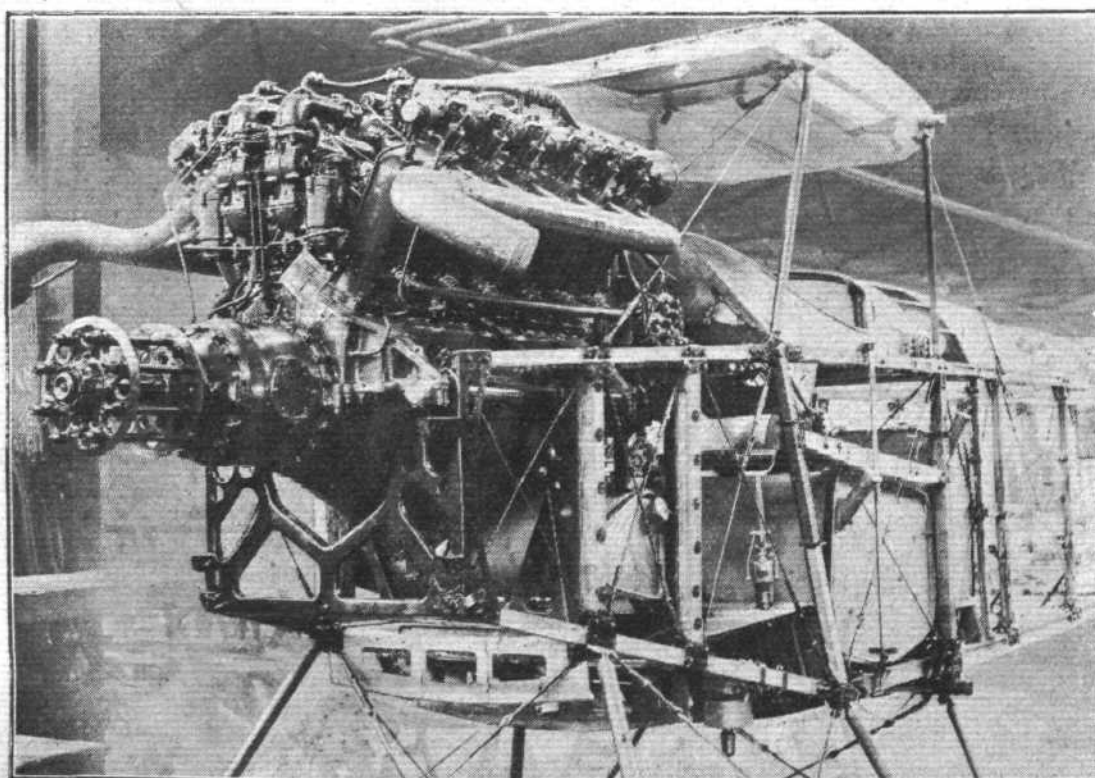


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**THE FAIREY TYPE IIID SEAPLANE :** Our photograph shows the "A.N.A.2," the second machine to be finished for the Australian Naval Air Service. Except for minor alterations this machine is similar to the standard type IIID described herewith.

which, although designed a good many years ago, is still considered good enough for the Air Ministry to place a large order with the Bristol Company for machines of this type. Again, take the machine at present under review—the Fairey IIID. The original machine, the type III, which was known in the R.N.A.S. as the N.10, was, we believe, first produced in 1917, and had a 260 h.p. Sunbeam engine. A modification of her, the IIIA, was fitted with land under-

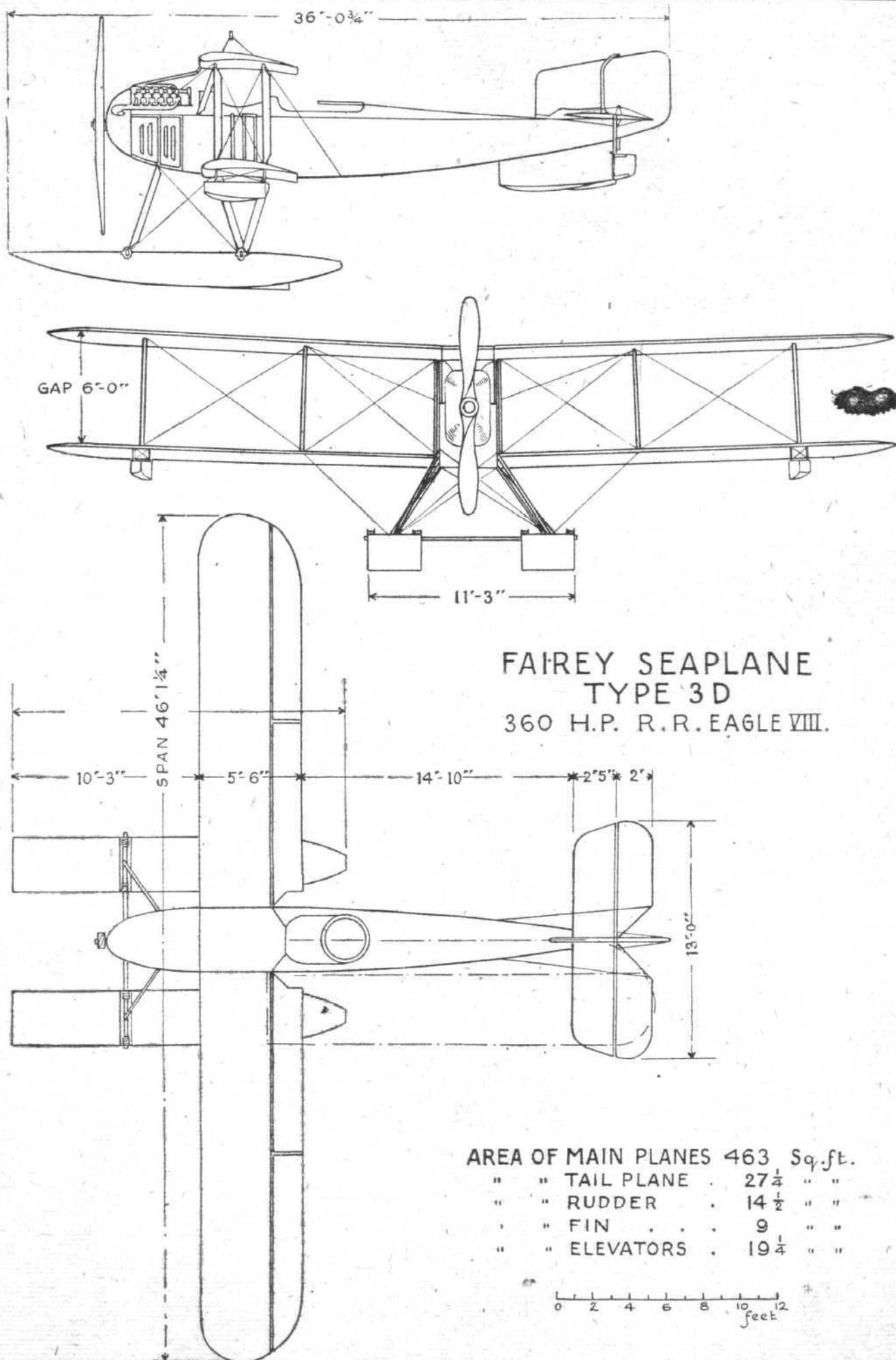
quently greater speed than the bomber. This machine was used for reconnaissance work, and became very popular. Modifications of it were built from time to time. Thus the machine which was to have been flown across the Atlantic by Mr. Sydney Pickles was of the IIIC type, but had larger wings so as to be able to carry the extra fuel. Yet another modification was the machine entered for the Schneider Race at Bournemouth in 1919. In this machine the wing



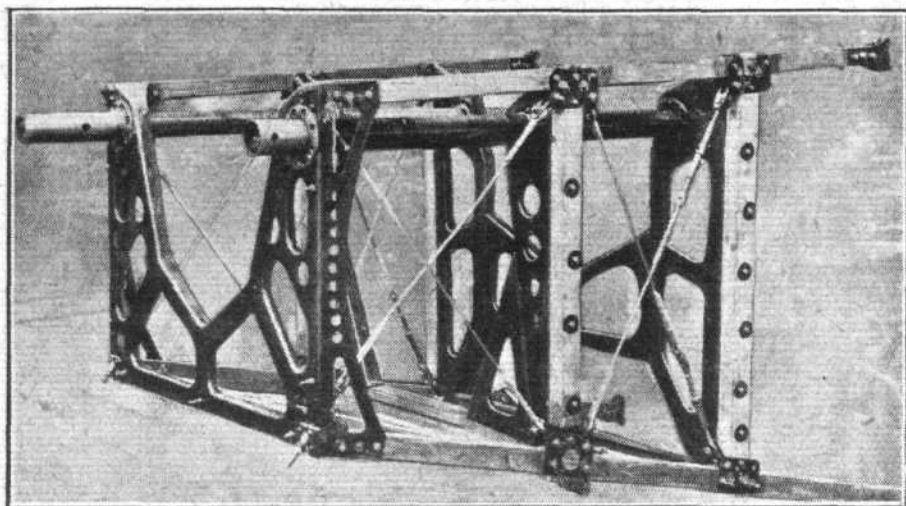
The Fairey Type IIID Seaplane : Front portion of the fuselage, showing Rolls-Royce "Eagle" engine.

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THE FAIREY TYPE IIID SEAPLANE : General Arrangement drawings, to scale.



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**THE FAIREY TYPE IIID SEAPLANE : View of the engine plates.**

area had been reduced to increase the speed, and had the day been a stormy one the Fairey would have been a hard nut to crack for some of the lighter and less seaworthy racers. As it happened the day was absolutely calm, and fog prevented the race from being run.

The type IIID, which is the one shown in the accompanying

of the fuselage struts. The sketches will make the arrangement clear. The diagonal panel bracing is taken from the two ends of the sheet where they meet after being wrapped around the longeron.

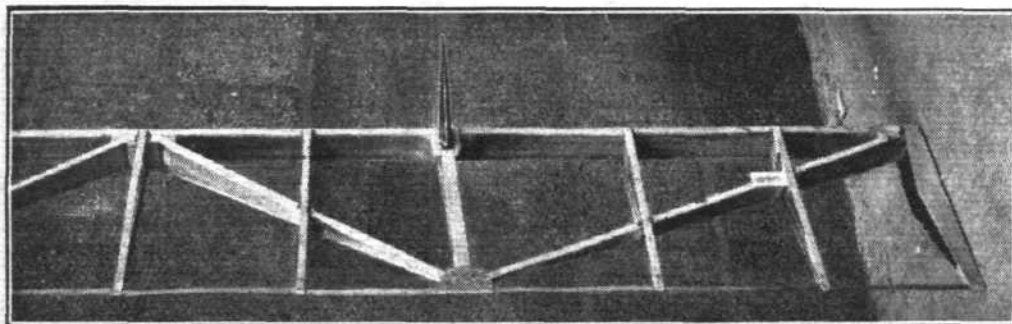
As regards the main portion of the fuselage, it has flat sides and bottom, and a rounded deck. In front, however,

Show, an even neater joint is provided. This is mainly the result of making the main framework of this part of the fuselage of steel tubing, but as the machine is an experimental one, we may not refer to this point in detail. The upper and lower joints are connected by a slightly sloping steel tube, which is, however, afterwards protected by a wood fairing so as to afford means of attaching the covering.

**Fuselage Construction**

As regards the general fuselage construction, this is the usual girder, with ash longerons and struts in front, spruce in the aft portion. A peculiarity of the construction is that the longerons are straight and non-tapered. The consequence is that the fittings are identical throughout the greater part of the fuselage. The actual shape of the fuselage fittings is indicated by two of our sketches. The whole fitting is pressed out of thin sheet steel, and is bent right around the longeron, small lips being bent up from the main pieces to form stops for the ends of the fuselage struts. The sketches will make the arrangement clear. The diagonal panel bracing is taken from the two ends of the sheet where they meet after being wrapped around the longeron.

As regards the main portion of the fuselage, it has flat sides and bottom, and a rounded deck. In front, however,



**The Fairey IIID Seaplane: Photograph of an aileron, showing triangulated construction.**

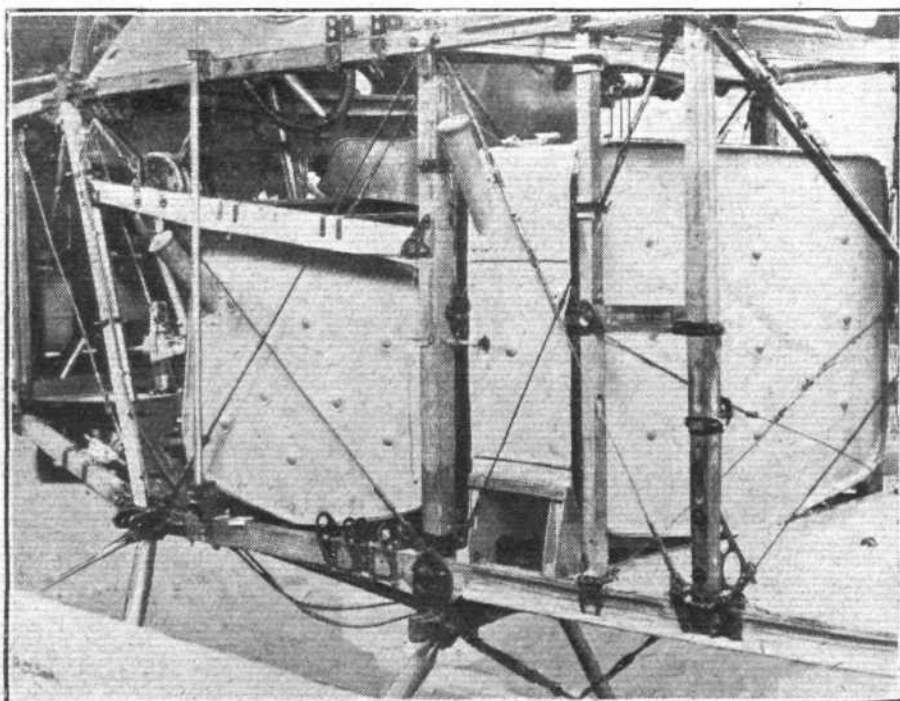
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illustrations, is a modification of the IIIC, but it is substantially the same machine except for minor alterations. The engine is a Rolls-Royce "Eagle" VIII, mounted in the nose and driving a tractor air screw. The engine is carried on two longitudinal tubular bearers, which rest in turn on three pressed-steel channel-section frames. These frames are of quite thin metal, but by being liberally flanged around all the lightening holes they have been found strong enough when the engine is in place. One of our photographs shows the front portion of the fuselage and these bearers. It may be noticed that the whole front portion of the fuselage, up to a point just behind the engine, is a separate unit, with straight longerons. By undoing a few bolts the entire engine unit can be removed *en bloc* from the machine. The manner in which this is accomplished is illustrated in one of our sketches. The sketches show the joint in the lower longeron. The joint in the top longeron is similar, except that there is, of course, no fork for wing attachments. The joint between the two parts of the longeron is made of a spool, machined out of the solid steel, and having holes for the many different members which meet at this point. Into the hollow centre of this spool is fitted the forked support for the lower front spar, as indicated in the sketch. The ends of the longerons are provided with light sheet-steel shoes, and fish plates, shaped as shown, are bolted through the longeron and through the holes in the spool. About twelve different members meet at this point, and it would be difficult to conceive of a neater way of joining all these. Yet in a later type, which is now being built, and is, in fact, similar to the machine shown at the last Olympia Aero

the floor is also rounded off, and covered with aluminium. The rest of the body is covered with fabric.

**Wing Construction**

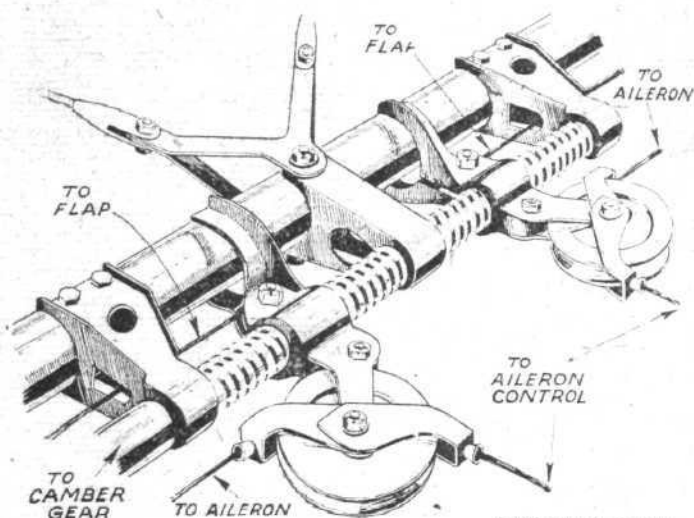
As regards the construction of the wings, this follows fairly standard practice, although in one or two respects one comes



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**The large petrol tanks of the Fairey IIID Seaplane.**





The worm gear operating the wing flaps on the Fairey seaplanes.

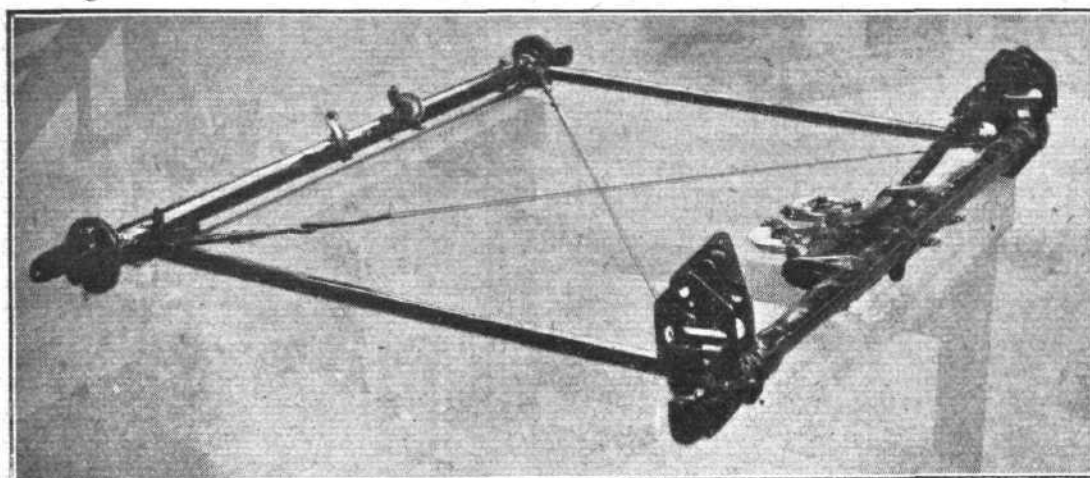
across some unusual and very interesting details. The main spars are I-section spruce, left solid and packed up where occur the fittings. These, by the way, are so designed as to bolt on the outside of the fabric, a feature which is of great

up. Each strut is built up of two halves, each made with a curved inner face tapering towards the ends. Thus, when the two halves are placed together, they touch in their centre only, the ends being some distance apart. The two halves are then sprung together, glued and taped, and, except for shaping the ends, the strut is finished. The result of springing the two halves is to put the outer skin of the strut under initial tension; consequently, when a compression load is put on the strut that part of the wood does not attain its zero or unstressed state until a certain load is reached. From this point onward, the outer fibres begin to become loaded in compression. It is difficult to find a strut formula which will fit this strut, but in practice it has given extraordinarily good results, furnishing one more instance of practice having outdistanced theory.

The top plane centre-section is supported on four circular section tubular struts, of which the rear ones are vertical, while the front struts slope back slightly. The wings are made to fold, vertical pins in the rear spar fittings forming the pivots. When folded, the wings are held in position by the fitting shown in one of our sketches.

#### The Undercarriage

The undercarriage is of the twin-float type, with two rectangular section flat-sided floats supported on a structure of steel tubes. The floats have a small step placed relatively far aft. As the floats are relatively short, a tail float is fitted under the aft portion of the fuselage. To the rear of this tail float is a small water rudder, connected up to and



The Fairey IIID Seaplane: Photograph of the tubular framework carrying lower spar attachments and worm-operating gear for flap control.

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advantage from the user's point of view. The ribs are of spruce, with lattice bracing in the form of spruce strips. The compression struts for the internal drag bracing are of very interesting design, and form a Fairey Patent. Their section is shown in one of our sketches, but the feature which gives them claim to special attention is the manner of building them

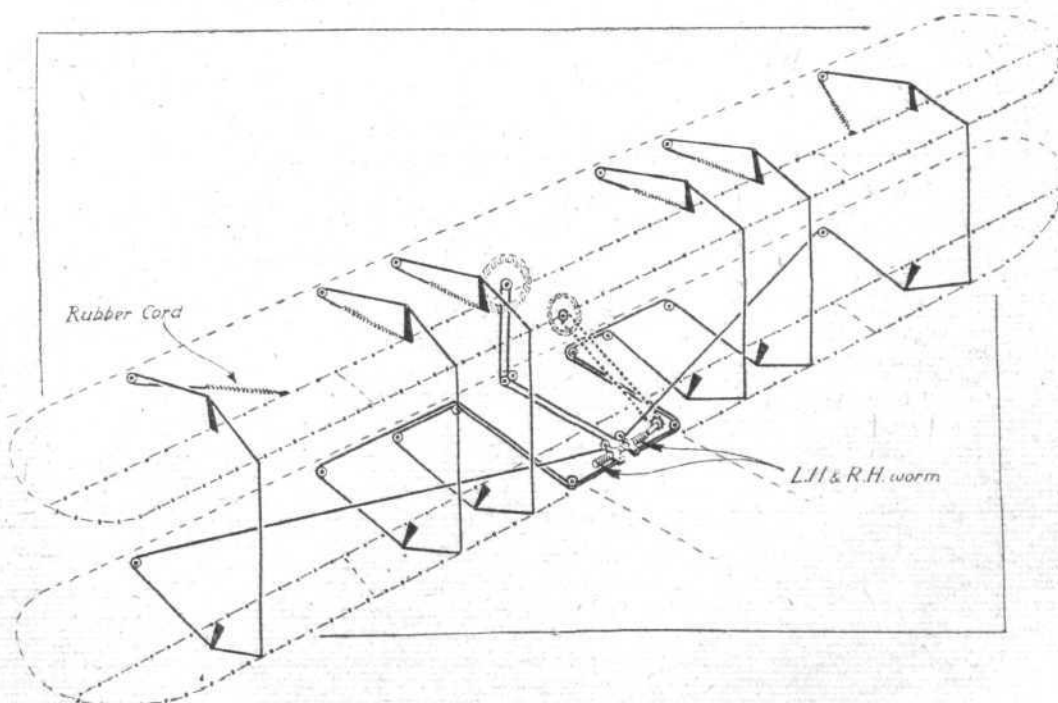
working with the air rudder, thus giving good directional control when the machine is taxiing.

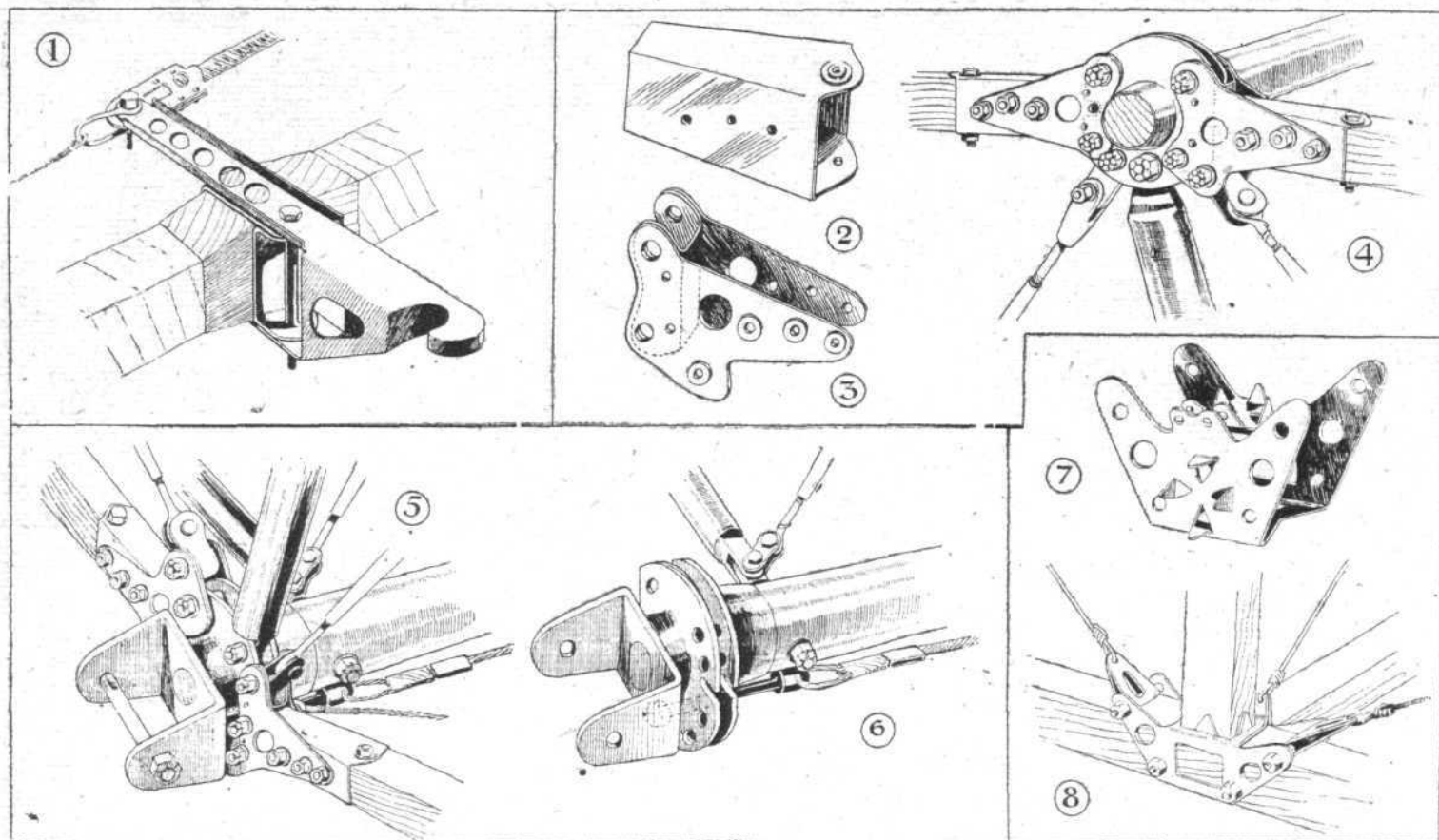
#### The Controls, Etc.

The standard part of the controls is in the form of a wheel for elevator and ailerons and a foot bar for the rudder. In al

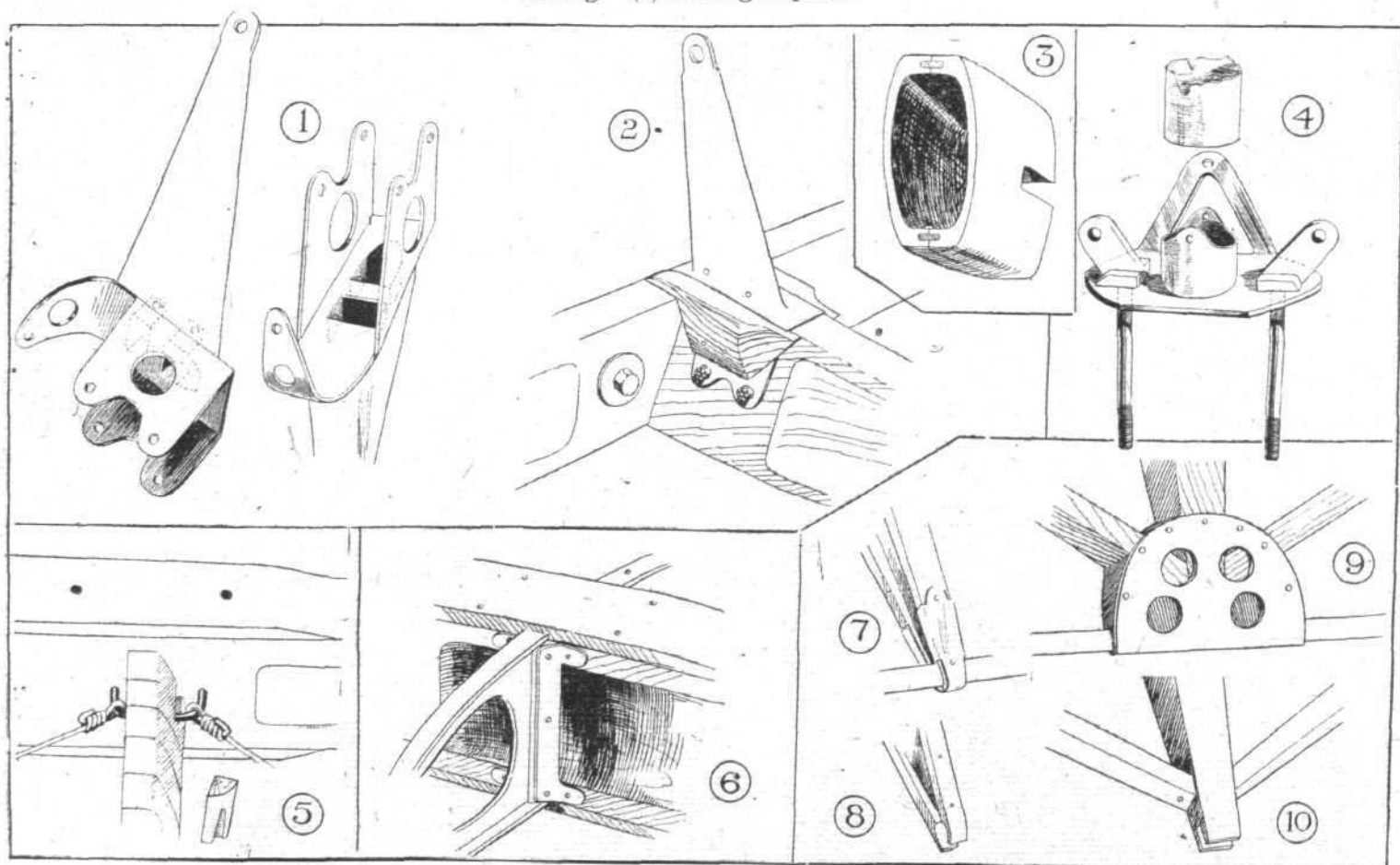
Diagrammatic sketch of Fairey camber gear.

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SOME CONSTRUCTIONAL DETAILS OF THE FAIREY TYPE IIID SEAPLANE : (1) The locking device which keeps the wings in place when folded. This fitting is mounted on the lower longeron of the fuselage. (2 and 3) The metal shoes on the ends of the longerons, where they are attached to the steel spool. (4) The spool joint in the top longeron, at the point where the engine unit joins the main fuselage. (5) The very ingenious steel spool at a point where about 14 members meet. (6) The steel spool without the fuselage members. (7) A typical fuselage fitting. (8) Fitting in place.



SOME WING DETAILS OF THE FAIREY TYPE IIID SEAPLANE : (1) Details of the aileron crank, showing how welded joints are not relied upon to transmit stresses. (2) An aileron crank lever in place. (3) Section of a compression strut. The two halves are sprung together, the resulting strut being extremely strong. (4) An interplane strut fitting. The struts are steel tubes with wood fairings. (5) Attachment of built-up compression strut to wing spars. The strut end is located laterally by small wood wedges driven down in corners of U-bolt. (6) Attachment of nose rib to front spar. (7 and 8) Attachment of tubular trailing edge to wing ribs. (9 and 10) Details of the construction of the triangulated ailerons.



Fairey machines, however, wing flap gear is incorporated, and this necessitates some additional control organs. Briefly speaking, the Fairey camber gear consists in pulling down or raising the entire trailing portion of the wings, from the rear spar to the trailing edge, at the same time retaining the differential movement of the *ailerons*. The manner of accomplishing this is indicated in one of our diagrams. The trailing edge of the planes is hinged throughout the entire length, and the wiring so arranged that the trailing edge is pulled down against the action of rubber cords. A reference to the diagram will make the principle clear. Mounted on a left and right hand worm in the *fuselage* are two internally threaded fittings which are caused, by rotation of the worm, to travel inwards or outwards. To these fittings are attached the inner ends of the flap cables, which run over pulleys on the lower front spar and from these back to the lower plane flap cranks. Thus when the worm is so rotated that the fittings travel inwards, the cables are pulled inwards as well, pulling down the lower plane flaps. From these, cables run to the trailing edges of the upper flaps and to the upper cranks, pulling down the top flaps with the lower ones. From the upper flap cranks cables run over pulleys on the top front spar, and back to rubber cords attached at their other end to the top rear spar. It will be seen that these rubber cords take the place of return cables, pulling up the flaps when the positive cables are paid out. The *ailerons* are pulled down with the rest of the trailing edge by means of cables passing

from the pulleys on the worm fittings to the *aileron* cranks on the lower plane. The lateral travel of these pulleys does not affect, or to a very small extent only, the length of the diagonal cable operating the *aileron*. It will be seen that although the *ailerons* are pulled down or up with the flap, their differential action is not interfered with, so long as the flaps are not down to the limit of their travel. The worm in the *fuselage* is operated by means of a wheel on the star-board side of the pilot's cockpit. In addition to the camber wheel, there is another and smaller wheel operating the setting of the tail plane so as to maintain the trim of the machine. In our diagram this wheel has been omitted for the sake of clearness.

The Fairey Patent camber gear is extremely simple, and in practice it has been found to give very good results, materially lowering the landing speed of the machine. We have no data as to the actual lift coefficient attained with this gear, but an approximate estimate indicates a maximum lift coefficient of close upon 0.9 absolute. Consequently a fairly high wing loading can be employed without raising the alighting speed to a prohibitive figure.

The following is a brief specification of the machine: Span 46 ft. 1½ in. Chord 5 ft. 6 ins. Gap 5 ft. 7 ins. Overall length 36 ft. 1 in. Area of main planes, 500 sq. ft. Weight fully loaded 5,050 lbs. Petrol capacity 105 gallons. Oil capacity 8 gallons. Useful load 1,060 lbs. Performance: Top speed 96 knots. Climb 5,000 ft. in 6 mins. 40 secs. Ceiling 17,000 ft.

## ROYAL AIR FORCE INTELLIGENCE

**Appointments.**—The following appointments are notified:—

Wing Commander G. F. Pretymann, D.S.O., O.B.E., from R.A.F. School (India) to R.A.F. Depot (Inland Area). Date 30.7.21.

Sqdn.-Ldr. A. A. B. Thomson, M.C., A.F.C., from Inter-Allied Aeronautical Commission of Control (Austria) to Inter-Allied Aeronautical Commission of Control (Hungary). Date 25.7.21.

Sqdn.-Ldr. R. M. Bayley, D.F.C., from Headquarters, Coastal Area, to command R.A.F. Base (203 Sqdn.) (Coastal Area). Date 15.8.21.

Sqdn.-Ldr. E. L. Conran, M.C., from Headquarters, Middle East Area, to Half-pay List. Date 24.6.21.

Sqdn.-Ldr. H. A. R. Aubrey, O.B.E., M.C. The appointment notified on 28.7.21, from Air Ministry (D. of E.) to R.A.F. Depot, with effect from 1.8.21, is cancelled.

Sqdn.-Ldr. L. Auker, O.B.E. (Stores), from No. 4 Stores Depot (Inland Area), to command Packing Depot, Inland Area. Date 30.7.21.

Sqdn.-Ldr. C. C. Darley, from Headquarters, Inland Area to command School of P.T. and Drill, R.A.F. Depot, Uxbridge. Date 25.8.21.

Sqdn.-Ldr. R. B. Maycock, O.B.E., from Air Ministry (D.O.I.) to No. 230 Sqdn. (Coastal Area) for flying duties. Date 3.9.21 (instead of 6.8.21).

Sqdn.-Ldr. L. Tomkinson, D.S.O., A.F.C., from R.A.F. Depot (Inland Area) to Air Ministry (D.O.I.) for staff duties. Date 3.9.21 (instead of 6.8.21).

Sqdn.-Ldr. W. Millett (Stores), from No. 3 Group Headquarters (Inland Area) to R.A.F. Depot (Inland Area). Date 25.7.21.

Sqdn.-Ldr. J. T. Babington, D.S.O., from Inter-Allied Aeronautical Commission of Control (Germany) to R.A.F. Depot (Inland Area). Date 1.8.21.

Sqdn.-Ldr. S. C. W. Smith, D.S.O., from No. 2 Flying Training School (Inland Area) to Inland Area Aircraft Depot, for technical (engineer's) duties. Date 1.8.21.

Group-Captain R. Gordon, C.B., C.M.G., D.S.O., from Half-pay List to R.A.F. Depot (Inland Area) pending embarkation overseas. Date 16.8.21.

Group-Captain C. S. Burnett, C.B.E., D.S.O., from No. 7 Group Headquarters (Inland Area) to Half-pay List. Date 12.7.21.

Squadron-Leader F. N. Smartt, M.B., B.A. (Medical), from Headquarters No. 11 (Irish) Wing to R.A.F. Depot (Inland Area). Date 25.8.21.

Squadron-Leader G. W. Williamson, O.B.E., M.G., from Inland Area Aircraft Depot to Aircraft Depot (India) for Technical duties. Date 8.7.21.

Squadron-Leader J. Rylands (Stores) from Air Pilotage School (Cadre), (Inland Area) to No. 1 Stores Depot. Date 28.8.21.

Wing-Comdr. I. G. V. Fowler, A.F.C., from No. 7 Group Headquarters (Inland Area) to Headquarters, R.A.F., India, for Technical Staff duties. Date 5.8.21.

Sqdn.-Ldr. R. P. Whitehead, from Aircraft Depot (Coastal Area) to R.A.F. School, India, for Technical duties. Date 5.8.21.

Sqdn.-Ldr. H. E. Whittingham, M.B., D.P.H., D.T.M., to R.A.F. Central Hospital on ceasing to be attached to Headquarters, Mediterranean Group. Date 22.7.21.

Sqdn.-Ldr. A. F. A. Hooper, O.B.E., from No. 10 Group Headquarters (Coastal Area), to No. 1 Flying Training School (Inland Area). Date 1.9.21.

Sqdn.-Ldr. G. H. P. Padley, from Boys' Wing (Cranwell), to No. 2 Flying Training School (Inland Area) for Technical (Engns.) duties. Date 10.9.21.

Sqdn.-Ldr. B. P. H. de Roeper, A.F.C., from Central Flying School (Inland Area) to School of Photography (Inland Area). Date 15.8.21.

Flight-Lieut. J. A. Macnab, to R.A.F. Base (205 Sqdn.) (Coastal Area), on ceasing to be attached to No. 230 Squadron. Date 25.8.21.

Flight-Lieut. C. E. H. C. Macpherson, to No. 4 Flying Training School (Middle East Area) on ceasing to be attached to Headquarters, Middle East Area. Date 15.6.21.

Flight-Lieut. J. S. Browne, A.F.C., from No. 216 Squadron (Middle East Area) to Aircraft Depot, Egypt. Date 5.7.21.

Flight-Lieut. L. A. K. Butt, from No. 4 Flying Training School (Middle East Area) to Palestine Group Headquarters. Date 14.6.21.

Flight-Lieut. E. W. Craig, M.C., M.B. (Medical) from No. 4 Squadron (Inland Area) to No. 2 Flying Training School (Inland Area). Date 12.8.21.

**Movements, etc.**—No. 45 Squadron moved from Helwan to Almaza on July 11, 1921.

No. 202 Squadron, Alexandria, ceased to exist with effect from May 16, 1921.

The Headquarters of No. 29 Group moved from North Queensferry to Donibristle, Fifeshire, on June 21, 1921.

**R.A.F., Cranwell.**—The Royal Air Force units at Cranwell have been re-organised as follows:—

- (a) Headquarters, R.A.F., Cranwell.
- (b) R.A.F. Cadet College, Cranwell: (i) Ground Wing; (ii) Flying Wing.
- (c) Boys' Wing, R.A.F., Cranwell.
- (d) R.A.F. Cadet College Band, Cranwell.
- (e) R.A.F. Hospital, Cranwell.

The Air Officer Commanding, Royal Air Force, Cranwell, is Commandant of the R.A.F. Cadet College, and commands all units at Cranwell.

**Aeronautical Commission of Control, Hungary.**—An Aeronautical Commission of Control for Hungary has been formed with effect from August 1, 1921. Wing Commander J. N. Fletcher, A.F.C., is chief of the British Delegation. The Headquarters are at Budapest. The Aeronautical Commission of Control for Austria ceased to exist from August 1, 1921.

**Relinquishments of Stations.**—The following Service stations have been relinquished or passed for disposal:—Blandford, East Fortune (Buildings), Barlow.



"Flight" Copyright

**CHRISTENING THE FAIREY IID-ROLLS : At the moment of the breaking of the bottle of champagne on the propeller boss, by Mrs. A. M. Hughes, wife of the Australian Premier.**

AN interesting function took place on Friday of last week (August 12), at the Hamble works of the Fairey Aviation Co., Ltd., when the first of a batch of Fairey seaplanes ordered by the Australian Commonwealth Government was launched by Mrs. Hughes, wife of the Australian Premier. The function was of more than ordinary interest on account of being the first occasion on which a Dominion Government has had launched a seaplane, ordered by it and designed and built in the Mother Country. To Australia thus belongs the credit and honour of being the first Dominion to realise that a country with such a vast seaboard can most economically and effectively protect her shores by the establishment of a strong Naval Air Service to keep a patrol of the coast line. A fleet of such size as to be able to perform this function would be extremely expensive to establish and maintain, whereas with aircraft, owing to its greater speed and handiness, not only is the first cost very materially smaller, but the cost of upkeep and running costs are also very much smaller. Thus it may well be that our Dominions, who have not already a large established fleet, may outdistance the Mother

Dominions, on the other hand, there is less in the way of traditions, of the old-fashioned naval way of thinking if one likes, while the distances to be covered are generally incomparably greater, and other geographical considerations frequently such as to offer a much vaster field for immediate aerial activity.

One must, therefore, come to the conclusion that, for a start at any rate, the Dominions will be able to derive much greater benefit from fostering aviation in all its branches than will the old country. And it is in view of this fact that we think the function at Hamble on Friday of last week was one of considerable significance.

Members of the party invited by the Fairey Aviation Co. and by Rolls-Royce, Ltd., proceeded to Southampton by train, where they were met by motor vehicles and conveyed to the Hamble works of the Fairey Aviation Co., Ltd. Arrived at the works, the visitors were received by Major-General The Rt. Hon. J. E. B. Seely, Mrs. Hughes, Mrs. Fairey and Mr. C. R. Fairey. It was originally arranged that Mr. Hughes, the Australian Premier, should be present, but



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**THE FAIREY "A.N.A.1" : The machine being launched from its slipway.**

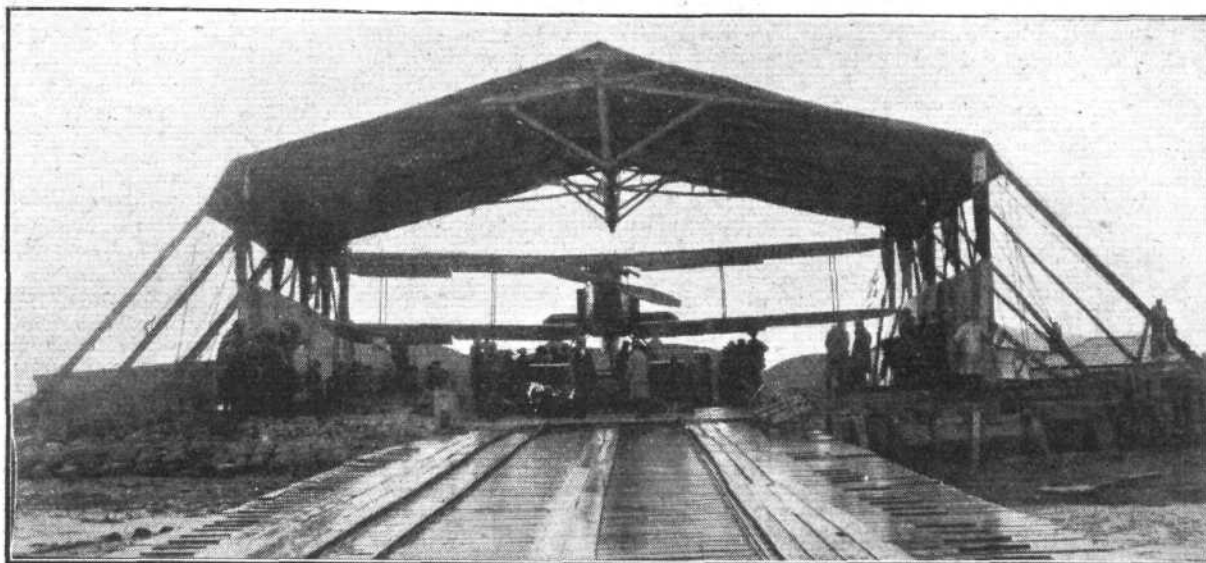
Country as regards the establishment of powerful Naval Air Services.

At home we have become used to regard the Navy as our sure shield, and so deeply rooted is this feeling that it is a matter of some difficulty for the man in the street (on whom must ultimately rest the decision) to grasp the possibilities of aircraft, and to realise the effect which its development will—and must—have on Naval warfare. It may, and probably will, therefore, take considerable time before it becomes generally accepted that our future lies in the air. In the

he was unavoidably detained in town on urgent public business. At the luncheon which followed, Gen. Seely presided, and, in a short speech, proposing "Success to the Australian Commonwealth," congratulated Australia on having a Premier whose far-sightedness had, among other things, led to the establishment of a Naval Air Force. He expressed the hope that Australia would also show the way as regards commercial aviation.

Twenty-eight years ago, he said, he was in Australia, and who could then have foreseen that some day the wife of





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## ON THE SLIPWAY : The-Fairey "A.N.A.1" shortly before the launching.

an Australian Premier would launch the first unit of a Naval Air Force? So far as he knew, he said, there were only two things which had not become obsolete in the meantime, one was Mr. Hughes, who was now beginning to realise the dreams he then dreamt and the ambitions for Australia which he then cherished. The other was the "Britannia," the King's yacht, which was launched that year, and which could still hold her own.

He also pointed out that it was not only in the matter of aviation that Mr. Hughes's activity had been of benefit to the Empire. He was one of the Dominions' Premiers who had stood by the British Premier during the last few critical weeks, and he (Gen. Seely) would hazard the guess that if it had not been for the Imperial Conference we should not now have progressed as far on the road to peace in Ireland as we had done. General Seely then called upon Mrs. Hughes to say a few words.

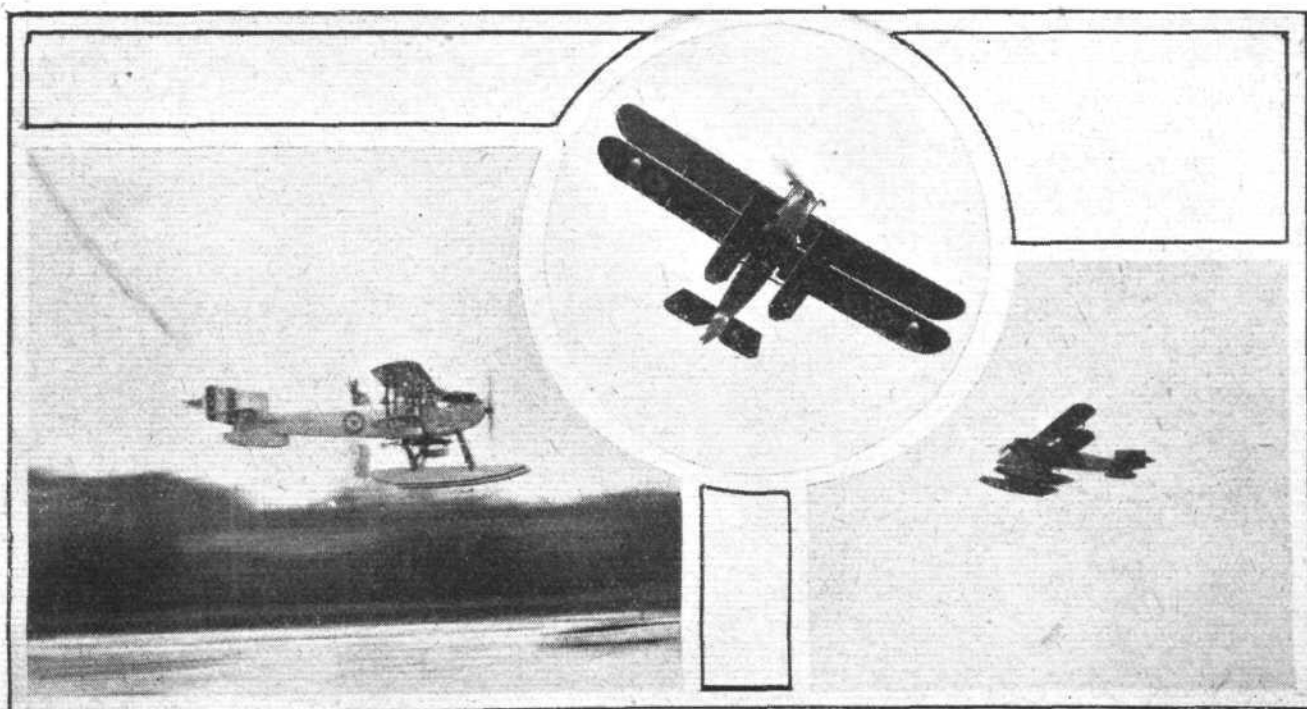
Mrs. Hughes won the hearts of everybody present by her half-shy expression of thanks for the many nice things which had been said about her husband, and caused much merriment and applause by stating that she would say no more, as she did not believe in having two speakers in a family.

The Hon. J. McEwan Hunter, Agent-General for Queensland, responded on behalf of the Commonwealth. He pointed out that to a country like Australia, with her relatively small population and her extensive coastline, it would be impossible

to protect her shores by a Navy that would be within the means of the Commonwealth. For this purpose aircraft was most economical and efficient, being able to patrol the coast and the adjacent part of the sea, and thus keep a sharp watch on all that might be going on. It was for this reason that Australia had placed an order for Fairey seaplanes, the first six machines of which were now ready. These machines, with their Rolls-Royce engines, had a range of 550 miles at a speed of 100 m.p.h., and carried three people, bombs, machine-guns, ammunition, and wireless equipment.

Col. J. T. C. Moore-Brabazon, M.P., in proposing "The Australian Air Force," paid a warm tribute to the splendid services rendered by Mr. Hughes in connection with aviation at the Imperial Conference. No one had shown such vision as he in the matter of aviation, and no one appeared to have realised so fully the great aid which aviation, in one form and another, was going to render in bringing parts of our far-flung Empire into closer and more intimate communication. Col. Moore-Brabazon also paid a very hearty tribute to "our dear old 'Boom,'" Sir Hugh Trenchard, who had fought, and was fighting, for our Air Force.

Major W. A. Coates, of the Australian Air Force, in responding, said that, in the absence of Sir Ross Smith, who had done such splendid work (and who was to have replied to this toast), he felt that he really could say very little. If it was true that



"Flight" Copyright

THE FAIREY "A.N.A.1" : Three views of the machine in flight, carrying as passengers General Seely and General Sir Sefton Brancker.

Australian aviators, and Australians generally, had done so much for the Mother Country during the War, it was no less true that every assistance had been unstintingly given to Australia in the matter of aviation by the Royal Air Force. He hoped and believed that the Australian Air Force would live up to the traditions of the R.A.F.

Mr. C. R. Fairey then thanked the Chairman, General Seely, for having consented to be present on this occasion, after which there were several toasts, among others to the War Babies of Mrs. Hughes and Mrs. Fairey.

Among the numerous guests present we noticed, mentioning only a few at random, Major-Gen. Sir Frederick Sykes, Brig.-Gen. Bagnall-Wild, Major-Gen. Sir Sefton Brancker, Mr. A. V. Roe, Mr. Basil Johnson, Sir John Cockburn, and Mr. Ashbolt (Agent-General for Tasmania).

The party then proceeded, in a (more or less) welcome rainstorm, to the slipway where was standing the machine "A.N.A.1." By an ingenious arrangement of silk cords, a bottle of champagne was so suspended that, when the cord was cut, it would drop on to the propeller boss. "I name this seaplane 'Mary,' and wish her God-speed; and I wish all who fly in her God-speed." With these words Mrs. Hughes (whose name is Mary) cut the cord with a tiny silver sword, presented to her by Mr. C. R. Fairey. The bottle of champagne (Australian) duly broke on the propeller boss, and the engine was started. Col. Nicholls took his place in the pilot's cockpit, while Mrs. Coates occupied the wireless operator's "office." Gen. Seely climbed over the Scarff gun ring into the aft cockpit, followed by Gen. Brancker (complete with monocle), the latter two passengers evidently sitting

in some discomfort on one another's knees, and the machine was let down the slipway on her cable. Without a hitch she floated off, Col. Nicholls opened out the engine and away went "A.N.A.1" down the Hamble. Soon she was seen to rise, and came circling over the works, Gen. Brancker standing up and waving his hands (we failed to observe whether the monocle was still in place).

Thus ended a highly successful function (except that we presume the machine has come down again since then, an operation which a waiting motor bound Southampton-wards prevented us from seeing), which marks a milestone in aviation in its relation to our Dominions.

As already mentioned, the machines ordered by the Australian Commonwealth are similar, except for minor modifications, to the standard Fairey Type IIID described and illustrated on pp. 552-557. The detailed description of the standard machine should, therefore, be of special interest to our readers. A brief reference may be made to some of the respects in which the Australian machines obviously differ from the standard.

For instance, in the matter of covering, a different doping scheme has been necessitated by the climatic conditions. Thus the pigmented covering is aluminium, of the "Cellon" variety, and certainly the machine looked extraordinarily well with its silvery sheen. The reason for the aluminium paint is, however, of a more practical nature, the object being to prevent the interior of the wings from reaching too high temperatures. Much for the same reason the floats, which are divided into nine watertight compartments by bulkheads, have been painted white.

## THE LONDON-CONTINENTAL SERVICES

FLIGHTS BETWEEN AUG. 7 AND AUG. 13, INCLUSIVE

Route†	No. of flights*	No. of passengers	No. of flights carrying		No. of journeys completed†	Average flying time	Fastest time made by	Type and No. (in brackets) of Machines Flying
			Mails	Goods				
Croydon-Paris ...	39	177	12	28	37	2 53	Breguet F-ADBM (2h. 17m.)	B. (7), D.H.4 (1), D.H.18 (2), G. (3), H.P. (3), Sa. (1), Sp. (4).
Paris-Croydon ...	41	191	16	28	38	2 54	Breguet F-ADBO (2h. 20m.)	B (7), D.H. 18 (2), G. (3), H.P. (3), Sa. (1), Sp (7).
Croydon-Brussels ...	11	17	5	5	11	3 0	D.H.4 O-BATO (1h. 50m.) ...	D.H.4 (4), D.H.9 (2), G. (2). Av. (1).
Brussels-Croydon ...	8	27	6	6	5	5 0	D.H.4 O-BADO (2h. 21m.) ...	D.H.4 (5), D.H.9 (1), G. (2)
Croydon-Amsterdam ...	6	6	6	6	6	3 12	D.H.9 H-NABO (2h. 45m.)	F. (3), D.H.9 (1).
Amsterdam-Croydon ...	6	20	6	6	6	4 36	Fokker H-NABN (3h. 42m.)	F. (3).
Totals for week ...	111	438	51	79	103			

\* Not including "private" flights.

† Including certain journeys when stops were made *en route*.

‡ Including certain diverted journeys.

Av. = Avro. B. = Breguet. Br. = Bristol. Bt. = B.A.T. D.H.4 = De Havilland 4, D.H.9 (etc.).  
F. = Fokker. Fa. = Farman F.50. G. = Goliath Farman. H.P. = Handley Page. M. = Martinsyde. N. = Nieuport.  
P. = Potez. Sa. = Salmson. Se. = S.E.5. Sp. = Spad. V. = Vickers Vimy. W. = Westland.

The following is a list of firms running services between London and Paris, Brussels, etc., etc.:—Co. des Grandes Expresses Aériennes; Handley Page Transport, Ltd.; Instone Air Line; Koninklijke Luchtvaart Maatschappij; Messageries Aériennes; Syndicat National pour l'Étude des Transports Aériens; Co. Transaérienne.

## ROYAL AIR FORCE MEMORIAL FUND

A MEETING of the Executive Committee of the above Fund was held at the offices on July 27, Lord Hugh Cecil in the Chair.

Members of the Committee present were:—Lady Leighton, Dame Helen Gwynne-Vaughan, Mrs. Barrington Kennett, Sir Charles McLeod, Sir John Salmond, Major-Gen. Sir Sefton Brancker, Messrs. H. E. Perrin, F. E. Rosher, and W. S. Field.

A list of subscriptions received since the last meeting on June 29, together with a list of grants made since the same date, were submitted, and the issue of grants was approved, namely, £315 7s. 2d.

The Secretary reported that up to date Messrs. Hampton and Sons had been unable to dispose of "Woodcote," Ascot, but that they were taking every possible step to effect an early sale.

The War Memorial was very fully discussed, and the Chairman of the Sub-Committee, Lord Hugh Cecil, made a report as to how the matter had progressed, and it is hoped

that at the next meeting of the Committee preliminary designs for the consideration of the Executive Committee may be submitted.

The Vanbrugh Castle School will be opened for the reception of boys up to the number of 15 on August 17, and the formal opening of the School was deferred till a date in October next, when it is hoped that H.R.H. Princess Mary will be able to perform the opening ceremony.

Sir John Salmond made a preliminary statement as to the proceeds of the R.A.F. Pageant held at Hendon on July 2, and after paying all expenses it is hoped that the sum which will accrue to the Fund will be considerably over £7,000, which was regarded as a magnificent result.

It was also mentioned at the meeting that a sum of £2,000 was on its way from Egypt, being the result of an Air Pageant held at Cairo in March last.

The Committee, after transacting its business, adjourned for the vacation, and will hold its next meeting early in October.



## LONDON TERMINAL AERODROME

Monday Evening, August 15.

THERE has been a big slump in passengers this week. All lines have felt its effects, but those who, through shortage of machines, have been in the habit of turning away "fares," have still had comparatively full loads.

There is little doubt but that the change in the weather is responsible mainly for this falling off in traffic, and there are pessimists on the aerodrome who describe this summer's "boom" as being purely artificial owing to the abnormally fine weather.

Although there is something to be said for this view, there is no question that many passengers who were induced to try the air journey by the fine weather have been so pleased with this method of transport that they will become regular "airway" travellers; and there is a growing, dependable traffic that is more or less unaffected by weather conditions.

### Bad-Weather Flying

THERE has been some "rough" weather during the week. Pilots have been dodging thunderstorms, and clouds have been very low at times. Drizzling rain has also affected the visibility adversely, but in spite of this all the British machines have completed their journeys to schedule; and, apart from engine trouble, the foreign companies have also put up a very good show.

The K.L.M. are trying a Falcon air-screw on one of their monoplanes. One of the Falcon Company's standard propellers gave quite good results; but I understand that a special "prop." is to be designed by this Company for the Fokker monoplane; whereupon an improved performance is anticipated.

In the published table of average times taken on air journeys the Amsterdam route does not show up particularly well; but it must be remembered that on this route there is a halt at Rotterdam, and this accounts for a proportion of the time. This halt is only supposed to occupy 15 minutes, but in many cases it is exceeded, and affects adversely the total time of the journey.

One of the most striking points in the passenger "slump" is that the Amsterdam route has not suffered: in fact 28 passengers have been carried as against 9 last week. This only makes traffic fluctuations more obscure. Why, for instance, should there be such a sudden increase on the Amsterdam service?

Capt. Grieg has suffered from the general falling-off in the traffic. He has, for the first time, a good supply of machines; but the bookings have been so poor that these have been returning to Paris empty.

### Sunday Service to Paris

As from Sunday last, the Messageries Aériennes are running a regular Sunday service to Paris, leaving Croydon at 11 a.m.

This Sunday three machines left for Paris, a Breguet and a five-seater Spad with passengers, and a Salmson with goods.

Today Capt. Grieg has 10 passengers booked for Brussels, but, owing to engine trouble, a Goliath which was due at Croydon on Saturday forced-landed and did not arrive; so Capt. Grieg was obliged again to disappoint Brussels passengers.

### The Question of "Airworthy" Certificates

CAPT. HERNE was fined £30 and £10 10s. costs at Croydon on Saturday. Two of the charges were for carrying passengers without having a daily "airworthy" certificate as to the fitness of his machine from a licensed ground engineer.

Considering that the Air Ministry charge these joy-ride and air-taxi people £10 a month for the garaging of each machine, it would appear that some arrangement could be made whereby the A.I.D. Inspector already on the aerodrome, or a ground engineer supplied by the Air Ministry, could inspect these machines and issue daily certificates. The present arrangement, requiring each firm or individual to find their own ground engineers, makes it practically impossible for these small men to exist; and it must be remembered that they are a valuable asset to the air industry.

Mr. Flowers, of Handley Page Transport, is expecting the new Bristol 10-seater back at Croydon during the next week. He tells me it is not anticipated that the W.8 will be ready for service for another three weeks. With the help of these two new machines, Handley Page Transport intend to maintain a regular daily service in each direction between London and Paris throughout the winter, keeping a couple of the present 0-400's always in reserve.

### Bringing a Patient from Paris

ON Saturday one of the 0-400's left Croydon for Paris as early as 6.10 a.m., with Sir Douglas Shields, the surgeon, who

was bound for Paris to attend—and if possible bring back by air for an operation—Major L. E. Ottley, a patient who had been taken suddenly ill.

The aeroplane arrived at Paris at 9.40 a.m., and it was found that the patient was well enough to be moved.

The cabin of the Handley was equipped to give the patient as much comfort as if he was in an ordinary bed, and he actually appeared to improve during the air journey from Paris to London. An ambulance had been telephoned for, and was waiting at the aerodrome when the machine arrived, and the patient was transferred to this and driven rapidly to a private hospital in London.

There appears to be considerable activity across at the Aircraft Disposal Company. On Friday two S.E.5's were in the air, giving a fine "stunting" exhibition.

Aircraft Transport and Travel still lives. Mr. Lewis has not got rid of the stores as yet, and can be seen dispensing screws in pennyworths to the various air transport firms. Once a week Mr. Priestley turns up at the aerodrome, just to see that the activities of A.T. and T. are still progressing satisfactorily. The D.H.16's which used to be employed by "Airco," are still deteriorating in the Bessoneaux, and it is hardly likely that they will appear on the airways again in the light of present-day loads.

### Concerning Petrol

THE Shell-Mex bulk storage petrol plant is still impotent. It is surrounded by tins of sand in case of fire, and a notice has been erected warning all and sundry that it is dangerous; but in spite of this it fails to deliver the goods.

In the meantime Handley Page Transport, who will use nothing but Shell, are getting their supply in barrels, while everyone else uses Pratt's from the pump—a fact that the "Anglo" Company have not been long in converting into a first-class advertisement.

During the week two S.N.E.T.A. De Havillands which flew from Brussels to Croydon only required 20 gallons of petrol each to fill up on arrival; whereupon Mr. Shaw, to whom the sale of petrol is as life itself, sent a request to the Weather-hut for a good strong west to north-west wind—hence, one supposes, the cold wind during the week-end.

The accidents to the "Vimy" and the B.A.T. last week have naturally had a big effect on the traffic returns of the Instone Air Line. Throughout the week the flying has been confined to one machine to and from Paris daily, as they have only had the two D.H.18's with which to carry on the service. Even the D.H.4 has been pressed into service, and left for Paris on Saturday morning.

### Smart "Air Taxi" Work

THE Surrey Flying Services have had quite a good season and are still obtaining a lot of "taxiplane" business. On Saturday, within an hour of the receipt of a 'phone enquiry, a passenger had motored from London to Croydon and Capt. Muir was in the air with him en route for Brussels. In the absence of Capt. Muir, Mr. Carter was attending to the joy-riders with the Surrey Flying Services' spare Avro. There was quite a rush of joy-ride passengers on Sunday morning, and Mr. Carter's landings were an example of how such alightings should be made, exciting the admiration of the crowd in the paddock.

### Business Man Deserts Earth for Air

MONSIEUR GOGO, a Belgian man of affairs with international interests, who has become a regular "air-taxi traveller," has now engaged Capt. Muir to take him for two prolonged trips across Europe, in which he will abandon trains in favour of the aeroplane.

As at present arranged, M. Gogo intends to start for Prague on Tuesday; while next month, if permission can be obtained, he hopes to fly to Constantinople, by way of Constanza in Roumania.

I understand also that M. Gogo has ordered a Bristol tourer coupé, which he intends to use as his private "air-car" in future business trips.

Grands Express have recovered to some extent from their epidemic of engine trouble, but are not yet out of the wood. They have carried the greatest number of passengers this week, but have not managed to get them all to their destination by air, both engine trouble and the weather playing their part in this.

Today the airway's youngest passenger went to Paris by "Goliath." A baby girl of 5½ months made the air journey, and did not seem in the least disturbed, or afraid of the sound of the engines.

# THE ROYAL AIR FORCE

London Gazette, August 9

## Permanent Commissions.

### Stores Branch

Flying Offr. H. E. T. Crocker is granted a permanent commn., retaining his present substantive rank and seny.; June 17, 1920.

### Short Service Commissions

The follg. are granted short service commns. as Flying Offrs., with effect from, and with seny. of, the dates indicated, except where otherwise stated.—\*F. J. E. Feeny, D.S.O.; July 29. \*J. M. McAleery; July 27. A. J. Barlow, E. F. Haylock, A. D. Page, M.M.; July 26. P. Wilson, M.C.; July 18 (substituted for *Gazette*, July 26).

\* These officers, previously substantive Flight Lieuts., will be placed at the head of the list of Flying Officers, but junior to all officers similarly reduced in rank on the grant of permanent or short service commns.

### Seconding

The follg. Lieuts. (Army) are granted temp. commns. as Flying Offrs. on seconding for four years' duty with the R.A.F.—F. F. Inglis (Duke of Cornwall's L.I.), J. E. V. Lindsey (Arg. and Suth'd. Hrs.), R. H. Miles (Queen's Own R.W. Kent R.); July 8. J. L. Hayward (R.A.F.), A. G. Lawe (Lincs. R.); July 13. P. N. Melitus (R. War. R.); July 18. R. W. H. Cook (R.G.A.); July 27. A. P. C. Hannay, M.C. (Cam'n. Hrs.); July 29.

### Flying Branch

Sec. Lieut. F. B. Stark is transfd. to the Unemployed List; Aug. 4. Sec. Lieut. G. R. Harrison is dismissed the service by sentence of General Court-Martial; Aug. 29, 1918.

## Technical Branch

*Gazette*, April 13, 1920, respecting the relinquishment by Flying Offr. F. R. Wilkins of his grading for pay and allces. as Flight Lieut.; is cancellzd. Maj. W. H. Bell is transfd. to the Unemployed List; July 5.

### Memoranda

Five Cadets are granted hon. commns. as Sec. Lieuts., with effect from the dates of their demobilisation. Sqdn. Ldr. H. A. R. Aubrey, O.B.E., M.C. (Maj., King's Shropshire L.I.) relinquishes his temp. commn. on return to Army duty (from S.O.); Aug. 1.

London Gazette, August 12

## Permanent Commissions

Group Capt. R. Gordon, C.B., C.M.G., D.S.O., is restored to the active list from half-pay; Aug. 16.

### Short Service Commissions

Stores Branch.—D. J. Sherlock, is granted a short service commn. as Pilot Officer on prob. for accountant duties; July 4 (substituted for *Gazette* July 19).

Flying Branch.—*Gazette* Jan. 13, 1920, relating to Lieut. W. J. Burr, M.C., D.C.M., M.M., is cancelled. *Gazette* March 4, 1919, relating to Sec. Lieut. E. H. Searle, is cancelled.

Administrative Branch.—Lieut. O. V. Lee is transferred to the unemployed list; Aug. 3.

### Memoranda

Two Cadets are granted hon. commns. as Sec. Lieuts. with effect from the dates of their demobilisation. One Canadian Cadet is granted a temp. commn. as Sec. Lieut., and relinquishes his commn. with permission to retain his rank.

## Prizes for Air-Post Stamp Designs

FOR a year or so it has been a continual query in *FLIGHT* as to when Britain is to have that air-post stamp series. As we have so often emphasised, such an issue would help very materially to popularise the air-post, and incidentally should bring in a decent revenue to the country. Others would appear to be now realising this, and it is, we are glad to notice, being advocated in several directions. A practical turn has been given to the suggestion by the Junior Philatelic Society, which is organising the forthcoming London International Stamp Exhibition in 1923. The society is offering a premium of twenty guineas to artists and others for a prize design for an aero stamp embodying "features characteristic of, or appropriate to, the British Isles." The size of the stamp designs when reduced must be approximately either 22½ by 18½ mm., or 22 by 38½ mm., the sizes of the current British postage stamps. The inscription "Air Mail" and the value in figures and words, "1d." and "One Penny," are to be incorporated in the design. Those interested may obtain the full rules of this contest from the Hon. Secretary, London International Stamp Exhibition (1923), 44, Fleet Street, E.C. 4.

## Dutch Service Aircraft Markings

It is notified in Admiralty Orders that the markings of Dutch military and naval aircraft have been altered by Royal decree as follows:—At the end of each wing (on the top side of the upper plane and the under side of the lower plane, and in the case of monoplanes on both sides of the plane), also on both sides of the body of the machine, the mark carried shall be a circle divided into three equal sectors, and a small concentric circle within them. The inner circle is to be orange coloured and the sectors of the outer circle are to be coloured successively red, white, and blue. These marks will be carried only by Dutch military aircraft; the word "military" is here used in the sense of "non-civilian."

## Air-Parcels Post Charges Reduced

It is a move in the right direction that the Postmaster-General announces, in connection with the arrangements which were put in force on July 11 for the dispatch of parcels by aeroplane to Paris, that reduced rates are in force as from August 17 on parcels handed in at any of the special accepting offices in London, Birmingham, Bradford, Bristol, Cardiff, Edinburgh, Glasgow, Leeds, Liverpool, Manchester, Newcastle-on-Tyne, Sheffield and Coventry. Owing the P.M.G. states, to the reduction of the air company's charge for conveyance from Croydon to Paris, the new rates will be 3d. per lb. less than at present. The new scale will be as follows:—

Up to 1 lb., 1s. 6d.; 2 lb., 2s. 3d.; 3 lb., 3s. 3d.; 4 lb., 4s.; 5 lb., 4s. 9d.; 6 lb., 5s. 9d.; 7 lb., 6s. 6d.; 8 lb., 7s. 3d.; 9 lb., 8s. 3d.; 10 lb., 9s.; 11 lb. 9s. 9d.

Further, on and from Wednesday next parcels sent by the aeroplane service will be delivered at the house of the addressee, on payment by him of the small extra charge usually made for such delivery, and will not, as has been the case

hitherto, be retained at the air company's office in Paris for delivery only on application. In future therefore delivery should normally be made on the day of dispatch from London.

All this spells progress, but there is a long way still to go before the authorities reach the point at which they are encouraging aviation, as if they really wished it to make good.

## Italian Flying Incident

FROM Milan the *Daily Telegraph* correspondent, under date of August 14, states that an Italian aeroplane, making a daily postal service between Tripoli and Homs, was obliged to land owing to damage to the motor on the coast near Tagiura. Two officers and the two motormen on board the aeroplane were made prisoners by the Arabs. The aeroplane having been missed, a small gunboat, manned by Major Biagini and six sailors, was sent to reconnoitre along the coast. The aeroplane was discovered lying on the sands, and Major Biagini landed with three armed sailors to search for the missing crew. The prisoners were soon found locked in a hut near by, under the guard of seven Arabs. The Arabs, taken unawares, were ordered to lift up their hands and were made prisoners in their turn. The Italians, being thus set free, were supplied with a machine gun and left to watch the aeroplane until, a larger gunboat arriving, the aeroplane was removed.

## New Air Mail Service from Cairo to Baghdad

THE new air route which was recently opened across the desert from Palestine to Mesopotamia is, it is officially notified, to play its part in the establishment of an air mail service which has been authorised between Cairo and Baghdad. This service will be operated by Royal Air Force aeroplanes, and is being undertaken as part of the training programme in the Middle East; it is to run fortnightly from August 1. For the present the service will be restricted to the conveyance of official correspondence, and all Government Departments concerned have been invited to use it. Outgoing mails will be collected at two centres—London and Cairo. Those from London will be forwarded by the G.P.O. by ordinary transport to Egypt, the bags being handed over at Port Said by the captain of the steamer to a representative of the Royal Air Force. These, together with official despatches gathered together at Cairo, will be forwarded by air from the aerodrome at Heliopolis. The route which will be followed is:—Heliopolis-Ramleh, 260 miles; Ramleh-Amman, 65 miles; Amman-Kasr Azrak, 55 miles; Kasr Azrak-Ramadie, 400 miles; Ramadie-Baghdad, 60 miles. The total length of this line is 840 miles. On arrival at Baghdad the bags will be handed over to the postal authorities for distribution. Correspondence from Mesopotamia to England and to Egypt will be handled in a similar manner. It is estimated that a saving of 10 to 14 days will normally be effected by this service, but in the meantime only duplicates of correspondence will be forwarded.





## IN PARLIAMENT

### Royal Air Force Medical Service

COMMANDER BELLAIRS, on August 2, asked the Secretary of State for Air whether his Council is attempting to build up a separate medical service from the Army and Navy; if so, how many medical officers are there; whether casualties or invalids are sent both to naval and military hospitals, or exclusively to military hospitals; and whether any hospitals have been, or are being, built for the Air Force?

Capt. Guest: The answer to the first part of the question is in the affirmative, and to the second part, 124. This figure excludes medical officers employed at the Air Ministry. With regard to the remaining parts, casualties and invalids are sent, where possible, to the nearest naval, military, or civil hospital. No hospitals have been, or are being built for the Royal Air Force, but Royal Air Force hospitals have been established in buildings at Halton and Cranwell which were formerly occupied by other units. In addition, a temporary hospital for officers exists at Avenue House, Finchley. The latter is a private house, hired for the purpose, and has not been altered.

### Royal Air Force

MR. GILBERT on August 9 asked the Secretary of State for Air the number of aeroplane stations or depôts controlled by his Department; the present strength of men in the Air Service; approximately the number of aeroplanes in service at the present time; and whether it is intended to increase the number of depôts, men, or machines at the present time?

Capt. Guest: The number of stations and depôts controlled by the Air Ministry in the United Kingdom is 46, of which two are civil and two are experimental stations. The establishment of the Royal Air Force as authorised by Parliament for the present year is 30,880 all ranks. With regard to the third part of the question, I am prepared to give privately to my hon. friend the figures for which he asks. The answer to the last portion of the question is in the negative under each of the three heads. It is not intended to increase the number of depôts, men, or machines.

### Aviation in Germany

MR. RAPER, on August 9, asked the Secretary for Air if he would make a statement as to the present position of German aviation, indicating the passenger and/or postal services they are running, the average daily number of miles covered by these services, the form of subsidy the German aviation companies are receiving from the German Government, particulars as to the chief aerial post office which has been established in the Koenigstrasse, Berlin, the fares and rates being charged, particulars of the facilities being given by the German railway companies to assist the aviation companies in the distribution of the passengers, mails, etc., and the types of machines being employed on these services?

### Treaty Handicap

CAPT. GUEST'S reply is:—

The German Government are unquestionably fostering civil aviation, which is, however, at the moment considerably handicapped by the restrictions on the construction of aircraft imposed by the Treaty of Versailles. There are in Germany two main bodies which virtually control all air traffic—the Deutsche Luftreederei and the Nord Deutsche Lloyd. The latter comprises some eight or ten companies—the most important of which are the Rümpler, Albatros, Sablatnig, and Junker concerns. A large number of societies have been founded throughout the country with the object of stimulating interest in and promoting the development of aviation in all its civil aspects. The Government are indirectly represented on the 'Flug und Haven,' which is the most influential of these institutions.

Although prohibited by the Allied authorities from running air services outside Germany, the following internal air routes are understood to be actually in daily operation for mails and passengers:—

	Fare in Marks.	At Par Rates, about £ s.
(a) Berlin to Danzig and Königsberg .. ..	975	47 15
(b) " Bremen and Münster .. ..	650	31 17
(c) " Bremen and Wangeroo .. ..	650	31 17
(d) " Brunswick and Dortmund .. ..	800	39 4
(e) " Dresden .. ..	500	24 10
(f) " Leipzig, Nürnberg, Munich and Augsburg .. ..	1,725	84 10
(g) Hamburg to Magdeburg, Leipzig and Dresden ..	700	34 6
(h) Munich to Constance .. ..	400	19 12
(i) Stuttgart to Constance .. ..	450	22 1
(j) Travemünde to Warnemünde, Sassnitz and Swinemünde .. ..	550	26 19

Some 6,000 miles are said to be flown daily.

Subject to their machines having flown 20,000 km. during the past year, to 80 per cent. of the scheduled flights being carried out, to the acceptance of an

agreement to carry mails of 100 kg. or over on specified routes, approved companies are paid the following subsidy by the Government:—

10 marks for every km. flown up to 300 km.

11 marks for every km. flown over 300 km.

10 marks for every kg. of correspondence over 100 kg.

2 marks for every kg. of newspaper matter over 100 kg.

The total amount of the subsidy is not to exceed 11 million marks (about £539,000).

The post office in Koenigstrasse, Berlin, has been established in order to deal with correspondence leaving the German capital by air.

### Mail Charges

THE fares are as indicated under each air route, while the charge for correspondence, etc., is:—

Grammes.	Misc.	Letters.	Printed Matter.	Samples.
Up to 20 .. ..	—	80 pfs.	—	—
" 50 .. ..	1.40 mks.	1.60 mks.	95 pfs.	1.40
" 100 .. ..	2.20 "	2.40 "	1.90 mks.	1.90 "
" 250 .. ..	3.00 "	3.60 "	3.00 "	3.00 "
" 500 or over ..	11.60 "	—	5.60 "	5.60 "

Post-cards at 50 pfennigs (1 half-mark) and parcels up to 1 kg., 11.10 mks.

The mark at par rates equals about 11½d. Twenty grammes is equal to about 7/10ths of an ounce.

The railway companies arrange for connection between the air mail services and express trains, but no details are available.

All the services are being maintained by about 100 old military machines, acquired by the companies from the Allies after surrender by Germany to the Inter-Allied Aeronautical Commission Control.

### Our Airships

VISCOUNT CURZON, on August 9, asked the Secretary of State for Air what is the capital cost or value of all ships, material, etc., affected by the Government decision to scrap airships; what will be the estimated annual saving; what the probable sum will be that will be realised by the disposal of the ships, material, etc.; and whether any facilities will then exist for the handling of airships in the British Empire?

The Secretary of State for Air (Captain Guest): The original cost of existing British airships and airship material was approximately £1,575,000. This figure does not include the cost of accommodation. The annual saving under this head is estimated to be in the region of £250,000. But it must not be thought that this sum bears any relation to the expense which would be incurred if we continued to operate these airships. With regard to the third part of the question, the amount which may be realised by the disposal of the airships and airship material cannot at present be estimated within any approach to accuracy. It can be stated confidently, however, that the scrap value of the ships themselves is not large. With regard to the last part of the question, while the sheds and masts will not be manned, they will remain capable of being utilised at short notice.

Mr. Raper asked the Secretary of State for Air whether the offer made by His Majesty's Government to British civilian firms to take over the airships, equipment, spares and stores on terms approved by the Government still remains in force; and if so, for how long?

Captain Guest: The arrangement approved by the Conference of Prime Ministers, the terms of which were announced to the House by my right hon. friend the Secretary of State for the Colonies, on Thursday last, makes it still possible for private firms to come forward with proposals, although conditions have somewhat altered, and the original time limit has now expired. No such proposal could now be accepted without previous reference to the Dominions.

Mr. Raper: When the hon. and gallant gentleman says that the conditions have altered, does he mean that the conditions laid down by the Government have altered?

Capt. Guest: No, Sir. The hon. member must not read that suggestion into my reply. The conditions have altered to the extent of the answer made by the Secretary of State for the Colonies last Thursday.

### Royal Aircraft Establishment Designers

MR. R. YOUNG on August 11 asked the Secretary of State for Air the basis of grading to the class of temporary established civil servants which is applied in the case of the engineering drawing office staffs at the Royal Aircraft Establishment, Farnborough; and is he aware that at the present time draughtsmen who have similar duties and responsibilities to those placed in this class are in an inferior grade; and will the attention of his Department be given to the question of the removal of the anomaly and the consequent dissatisfaction among the members of the drawing office staff?

Capt. Guest: On the assumption that by the phrase "the class of temporary established civil servants" the hon. member intends to refer to the designers at the Royal Aircraft Establishment, the reply to the first part of his question is, that designers are graded as such because they are responsible for original design work. A draughtsman has neither similar duties nor responsibilities, and it would be both uneconomical and unfair to designers if draughtsmen were to be similarly graded.

### R.A.F. Boy Mechanics' Examinations

THE Civil Service Commissioners give notice that an open competitive examination of candidates for entry as boy mechanics in the Royal Air Force will be held at London, Edinburgh, Dublin, Birmingham, Chatham, Plymouth and Portsmouth on November 25. Applications to compete must be sent in to the secretary on or before October 13.

### Bourget Air-Pageant

FOR this year the idea of a French Air-Pageant has been shelved. It is to be held at Easter, 1922, at Bourget. M. Flandin is the Hon. President of the Organising Committee, and M. Léon Bathiat, President. Eighty per cent. of the profits goes to the funds for relief of aviators, and the balance to a similar fund for sporting journalists.

### The "Movies" in an "Aeroplane"

A NOVEL form of show is foreshadowed in the registration of a company, under the title of Holcroft Cinema Aeroplane, Ltd. The *raison d'être* of the company is to provide a cinema entertainment actually given in a large model aeroplane invented by Major Charles Holcroft, which performs certain motions and gives to the public the benefit of cinema enter-

tainment coupled with the sensation of flying, etc. Mr. E. Lewis Waller is a director of the company.

### The Napier-Engined Aerial Derby Winner.

MESSRS. D. NAPIER AND SON, LTD., write in connection with an advertisement which recently appeared, wherein the result of the Aerial Derby is given. The particulars set forth are, Mr. H. T. Vane points out, likely to be misunderstood by some people, as it omits to state the S.E. 5A machines were given a start of 23 mins. 24 secs. in front of the Napier-engined machine. Further the winner of the Aerial Derby is the machine which completed the course in the fastest time, which in this case was the Napier-engined Mars I, piloted by Mr. J. H. James, whose time for the distance was 1 hr. 13 mins. 8 secs., whereas the two S.E. 5's took 1 hr. 36 mins. 46 secs. and 1 hr. 40 mins. 24 secs. respectively, 23 mins. 38 secs. and 27 mins. 16 secs. longer than the Napier machine. As a matter of fact both the Aerial Derby and first Handicap prizes were won by the Napier-engined Mars I, two cups and £600 being awarded to the winner. The disqualified machine only passed the post first because it omitted to circle the pylon at the end of the first round, in other words it did not complete the course.

# LEGAL INTELLIGENCE

## Unlicensed Flying

ON August 13, before the Croydon County Bench, Capt. E. D. C. Herne was summoned at the instance of the Treasury for three offences under the Act and Regulations relating to aerial navigation. He was charged (1) with flying an Avro biplane from Croydon to Newmarket on June 27 without any licence as a pilot to fly passenger or goods aircraft; (2) with carrying two passengers to Newmarket on the same date, "to wit one Bullock and one Donoghue," without his machine having been certified as airworthy, and (3) with flying on July 21 with passengers from Croydon to Cardiff without his machine having been inspected before the flight by a competent person licensed for the purpose.

Mr. Eustace Fulton appeared for the Treasury, and Mr. P. T. Carden defended.

Mr. Eustace Fulton said that people taken up as passengers knew that the Air Ministry controlled civil aviation, and naturally supposed that the regulations for their safety were being observed. The defendant was summoned for completely ignoring them, for he had no licence of any valid sort on the day he took two passengers to Newmarket, June 27. His last licence before that expired on May 12, and a letter was sent calling attention to that, but he ignored it. One of the things necessary to the granting of a licence was medical examination; 90 per cent. of the accidents happening in the air were due in some measure to the unfitness of the pilot.

Mr. P. T. Carden (defending); I should like my friend to call evidence of that. I contest it entirely.

Continuing, Mr. Fulton said if there had been any defect on account of the defendant's health it might have resulted in the passengers losing their lives. The defendant took out another licence on July 1, when he satisfactorily passed the medical examination.

On the second summons, relating to the airworthiness of the machine on June 27, Mr. Fulton said that the last valid certificate as to the airworthiness of the machine before the date in question was March 12.

Reginald L. Green, Inspector of Aircraft, spoke to certain defects he noticed in the machine on July 5, including the frayed condition of the control wires.

Mr. Carden said that if this were really a summons for protecting the safety of the public he would call evidence to show that there was no safer pilot than Capt. Herne. He had flown the equivalent of many times round the world, and had never damaged a person or a machine.

What the Air Ministry was doing, Mr. Carden suggested, was to protect certain big flying companies, who objected strongly to what they called the "middle man," and desired to freeze him out. He submitted that the offence, if any, was the purest technicality, and pointed out that this matter concerned the actual livelihood of the defendant.

The defendant, giving evidence, declared that on June 27, from an ordinary commonsense point of view, the machine was in absolutely perfect condition, but he had not applied for a certificate because the machine had been standing by since March. On June 27 he was informed by telephone that Bullock and Donoghue, two jockeys, were stuck at Croydon.

Referring to the alleged defect in the machine, he added that he would be quite willing to take his mother up with the controls frayed in the manner described. "There is not a machine in existence on which you could not put your finger on controls frayed somewhere," he observed.

Dealing with the third summons, Mr. Fulton said that the defendant received £30 for taking passengers to Cardiff, his machine not having been inspected before the flight. The following day he endeavoured to persuade some of the ground men to give him a certificate dated the previous day.

Capt. Herne explained to the Bench that his machine had completed the flight perfectly; therefore it was obvious that it was airworthy. He asked for a certificate, which, owing to there being no groundsmen about, he could not get on the previous day, without any wrongful intention.

Mr. Carden remarked that it had been said of these air navigation rules that they suffered from bad conception, bad arrangement, bad drafting, bad grammar, bad law, and bad language. Defendant was fined £10 on each of the three summonses, with £10 ros. costs—£40 ros. in all.

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## Successful Dutch Air Service

It is stated that the results of the air services of the Netherlands Royal Aviation Company are so favourable, especially in consequence of the large consignments of goods, that the management of the undertaking is considering the continuance of the services during the winter 1921-1922.

## IMPORTS AND EXPORTS, 1920-1921

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910). For 1910 and 1911 figures see "FLIGHT" for January 25, 1912; for 1912 and 1913, see "FLIGHT" for January 17, 1914; for 1914, see "FLIGHT" for January 15, 1915; for 1915, see "FLIGHT" for January 13, 1916; for 1916, see "FLIGHT" for January 11, 1917; for 1917, see "FLIGHT" for January 24, 1918; for 1918, see "FLIGHT" for January 16, 1919; for 1919, see "FLIGHT" for January 22, 1920; and for 1920, see "FLIGHT" for January 13, 1921.

	Imports		Exports		Re-Exportation	
	1920.	1921.	1920.	1921.	1920.	1921.
Jan. ...	2,323	4,459	32,752	87,128	697	2,285
Feb. ...	9,320	2,379	68,932	59,829	—	19
Mar. ...	2,092	14	67,600	118,199	—	1,565
April...	5,918	1,370	148,484	138,983	—	450
May ...	761,425	3,350	237,627	59,624	400	1,818
June ...	491	5,181	300,572	79,713	61,150	—
July ...	51,020	540	286,646	530,628	—	850
	832,589	17,293	1,142,613	1,074,104	62,247	6,987

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## AERONAUTICAL PATENT SPECIFICATIONS

Abbreviations: cyl. = cylinder; I.C. = internal combustion; m. = motors. The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

### APPLIED FOR IN 1917

Published August 18, 1921

- [8,489. B. T. HAMILTON. Mounting and sighting apparatus for aircraft guns. (166,568.)  
9,062. J. B. HENDERSON. Gyroscopic apparatus. (166,570.)  
15,315. J. B. HENDERSON. Gyro-compasses, etc. (166,571.)

### APPLIED FOR IN 1918

Published August 18, 1921

- 17,240. C. J. H. MACKENZIE-KENNEDY and G. C. McLAUGHLIN. Control mechanism of aircraft. (166,577.)

### APPLIED FOR IN 1919

Published August 18, 1921

- 17,004. J. V. MARTIN. Aeroplanes. (166,586.)

### APPLIED FOR IN 1920

Published August 18, 1921

- 4,644. P. E. MIDDLETON. Rotary I.C. engines. (166,611.)  
9,986. R. B. JOHNSON. Direction indicator. (166,652.)  
10,889. R. RUTHERFORD. Revolving-cylinder I.C. engines. (166,691.)  
11,015. A. G. CANHAM. Tyres for aeroplanes, etc. (166,702.)  
12,447. MAYBACH MOTORENBAU GES. Oil-circulation means for high-speed I.C. engines. (142,843.)  
14,298. S. D. MASTER. Rotary engines. (166,786.)  
16,388. J. G. GRAY. Gyroscopic apparatus. (166,800.)  
16,753. H. JUNKERS. Radiators. (145,494.)  
20,107. J. L. LAMBERTS. Mechanism for manipulating aircraft controls. (166,814.)

### APPLIED FOR IN 1921

Published August 18, 1921

- 14,860. Sir J. B. HENDERSON. Gyroscopic compasses. (166,868.)

If you require anything pertaining to aviation, study "FLIGHT'S" Buyers' Guide and Trade Directory, which appears in our advertisement pages each week (see pages xv and xvi).

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